

University News

MONDAY, JANUARY 4, 1993

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Shri Bhishma Narain Singh, Governor of Tamil Nadu & Chancellor, speaking at the convocation of Mother Teresa Women's University. On his right is Dr. S. Lakshmi, Vice-Chancellor of the university. Others seen in the picture are Smt. Margaret Alva, Union Minister of State for Personnel, Public Grievances and Pensions, who delivered the convocation address, and Shri C. Aranganayagam, State Education Minister & Pro-Chancellor of the university

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Editor :
SUTINDER SINGH

Magna Charta of Universities

M.S. Swaminathan*

September 18, 1988, the University of Bologna in Italy commemorated its 900th Anniversary. On that occasion 450 Rectors and Vice-Chancellors from all over the world signed a "Magna Charta Universitatum". The Magna Charta stipulated the following three fundamental principles which must, now and always, support the vocation of universities.

"1. The university is an autonomous institution at the heart of societies differently organised because of geography and historical heritage; it produces, examines, appraises and hands down culture by research and teaching.

To meet the needs of the world around it, its research and teaching must be morally independent of all political authority and intellectually independent of all political authority and economic power.

2. Teaching and research in universities must be inseparable if their tuition is not to lag behind changing needs, the demands of society, and advances in scientific knowledge.

3. Freedom in research and training is the fundamental principle of university life, and governments and universities, each as far as in them lies, must ensure respect for this fundamental requirement.

Rejecting intolerance and always open to dialogue, university is an ideal meeting-ground for teachers capable of imparting their knowledge and well equipped to develop it by research and innovation and students entitled, able and willing to enrich their minds with that knowledge."

On September 18, 1992, 14 Vice-Chancellors of Indian universities signed this Magna Charta on the occasion of a special Indo-Italian symposium hosted by the University of Bologna. Dr. U.R. Rao and I were conferred honorary doctorate degrees by the University of Bologna on that occasion. My acceptance speech on that occasion is the basis of this article.

Long ago, the Roman Philosopher Seneca said "a hungry people listen not to reason nor cares for justice, nor is bent by prayers". Mahatma Gandhi expressed the same sentiment when he said "to the hungry, God is a loaf of bread". The television pictures we see daily now of starving children, women and men in Somalia testify the truth underlying the statements of Seneca and Gandhi. In 1964, Paul and William Paddock predicted a fate similar to "sheep going to a slaughter house" to the people of India by the year 1975. It may hence be appropriate to indicate the dimensions of India's accomplishments on the food security front.

The British colonial period began with drought and famine in Bengal in 1770, during which one-third of the population of the province perished. Just prior to the end of the colonial era, another great Bengal famine occurred during 1942-43, when about 3 million people died of hunger. Between 1770 and 1880, as many as 27 scarcities and famines were recorded. Twenty million lives were lost in about 20 famines during the period 1850 to 1900.

**Centre for Research on Sustainable Agricultural and Rural Development, Madras*

ing Pakistan and Bangladesh) was less than 300 million when great famines claimed numerous lives. The 1891 population figure of undivided India was 282 million. 10 million people died in a big famine in 1892. Today, the population of India alone is about 875 million and the population is growing by over 15 million each year. Yet, famines have been avoided since the country became independent in 1947. In 1965-66 food production was affected adversely by drought but there were no famines thanks to extensive food imports, largely under the PL 480 programme of the United States of America. Since the early seventies, the country prevented famines even during adverse weather conditions through a carefully designed food security system involving the maintenance of both substantial grain reserves and an extensive public distribution system. The foodgrain reserves were built largely from home grown wheat and rice, since from the late sixties, the rate of growth in food production generally exceeded the rate of growth of population. Timely imports both on concessional and commercial terms were made to replenish stocks in years when they were depleted due to widespread drought. By any standard, Independent India's famine avoidance strategy is a remarkable achievement. How did this happen ?

The Strategy

Three major groups of factors were involved. First, farm men and women, whether literate or illiterate, took to new technologies with enthusiasm and efficiency, provided they were convinced that the change will help to improve their livelihoods and provided they were enabled to adopt them through appropriate public policies in input pricing and supply and output pricing and procurement.

Second, the country had the wisdom to invest on agricultural research and education and build a national grid of research institutions, agricultural, rural and womens' universities and grassroot level training organisations like Krishi Vigyan Kendras. Not only the Indian Council of Agricultural Research (ICAR), the national agency for agricultural research and education, but the entire scientific community working in the laboratories of the Ministries of Science and Technology, Environment and Forests and Commerce, and the Council of Scientific and Industrial Research (CSIR), Departments of Atomic Energy, Biotechnology, Space, Electronics and Ocean Development, Indian Council of Medical Research (ICMR) and general universities supported by the University Grants Commission did their best to assist rural areas with new technologies. International collaboration also helped much, particularly with institutions supported by the Consultative Group on International Agricultural Research (CGIAR). Experience has shown that without a strong and dynamic national research system, advantage from international research will be minimal. This was clear

and rice improvement based on the initial material supplied by Dr. N.E. Borlaug from Mexico and by the International Rice Research Institute in the Philippines.

A third but vital contributory factor was government policies and programmes in rural techno-infrastructure development such as roads, irrigation, electrification and other forms of energy supply, extension services and markets. Land reform, remunerative pricing policies, credit supply, development of efficient extension services and various other forms of support to small and marginal farmers became possible due to political will and foresight and administrative action. In the mid-sixties, the country was fortunate to have Shri C. Subramaniam as Food and Agriculture Minister and Shri Lal Bahadur Shastri and Smt. Indira Gandhi as Prime Ministers, who were determined to make the country self-sufficient in food requirement. Administrators like the late Shri B. Sivaraman converted the political vision into practical programmes.

Thus, mutually reinforcing packages of technologies, services and public policies made it possible for farmers to make the country self-sufficient in foodgrains at current levels of purchasing power. By mid-seventies, the challenge shifted from physical to economic access to food. Inadequate opportunities for off-farm employment and inadequate attention to social organisation in rainfed areas with regard to saving and sharing water and to post-harvest technology, including biomass utilisation, led families without land or livestock or fish pond or trees remain under-employed or often unemployed. India's malnutrition problem thus became largely one of under-nutrition or calorie deprivation. It is estimated that over 200 million children, women and men living in poverty now suffer from chronic hunger. While famines have been avoided, chronic hunger persists and without jobs for all, this problem cannot be solved.

Sustainable Nutrition Security

Therefore, the challenge facing the country today is achieving sustainable nutrition security which involves physical and economic access to balanced diets and safe drinking water to all citizens. Only nutrition security at the level of individual households can ensure that children have an opportunity for the full expression of their innate genetic potential for physical and mental development.

India has now nearly 100 million operational holdings. 25% of the world's farmers are in India. India has also 20 percent of the global farm animal population. At the current rate of population growth, India will have over 1000 million people at the beginning of the 21st century. Compounding the problem of increasing economic marginalisation of the rural and urban poor, is the growing damage to the ecological foundations

essential for sustainable agriculture. Over 100 million hectares of potential farm land have undergone varying degrees of degradation. Even now, there is no policy for preventing the diversion of prime farm land for non-farm uses. The same is true of groundwater resources which are often being exploited in an unsustainable manner. Habitat destruction is leading to the loss of biological diversity. Protecting the already protected areas is proving to be a formidable task. In intensively farmed areas, biotic and abiotic stresses are increasing.

The challenge before scientists, political leaders and farmers is – how can agriculture yield more food, jobs and income in rural areas under conditions of shrinking land and fresh water resources, expanding biotic and abiotic stresses, loss of biological wealth and potential changes in climate, sea levels, and ultraviolet-B radiation? Sharing of research data, processes and products at the international level is also likely to be hampered in the future, due to the growing privatisation of applied research in industrialised countries.

Obviously, there is no simple or single solution to the complex ecological, socio-economic and technological problems facing those engaged in promoting sustainable advances in the productivity of terrestrial and aquatic farming systems. I can see no way of facing the scientific challenge except through accelerated efforts in the blending of traditional wisdom and technologies and modern technologies. The new technologies of particular interest to agriculture are biotechnology, information technology, space technology, micro-electronics and management techniques. Italian scientists like Prof. Umberto Colombo have demonstrated the value of technology blending in the textile industry. Italy has been so far the only industrialised nation which has promoted biotechnology research in the public sector through the International Centre for Genetic Engineering and Biotechnology (ICGEB) located at Trieste and New Delhi.

Sustainable agriculture will be possible only with location – specific technologies. Agenda 21 of the UN Conference on Environment and Development has stressed that a special anti-poverty strategy is a basic condition for ensuring sustainable development. Unless a pro-poor bias is imparted in technology development and dissemination, resource poor farm men and women will derive little benefit from the onward march of science, particularly in the area of biotechnology. This is where the initiative of the University of Bologna in forming a global consortium of universities committed to the improvement of the quality of human life within the carrying capacity of the supporting ecosystems is a timely one. We need similar consortia at the national level.

Bologna Magna Charta

The Bologna Magna Charta provides a new vision for partnership between universities and the societies

which support them. Obviously our first priority should go to solving the most serious problem of today, namely, the growing gap between the rich and the poor. UNDP's Human Development Report of 1992 indicates that over 82% of global income now goes to 20% of the human population. The poorest 20% receive only 1.4% of the annual world income. Such a deplorable situation is true both internationally and nationally and is the root cause of chronic hunger affecting over 600 million children, women and men. Unsustainable life styles and unacceptable poverty are both threatening the ecological security and social stability of our Planet. Expansion of ethnic conflicts and increased violence to both nature and fellow human beings will be the result of the widening income disparities among members of the human family. A combination of political will and scientific skill will be necessary to arrest and reverse this trend.

Let me illustrate what universities can do to assist in linking the ecological security of rural areas with the livelihood security of rural families by taking three examples from the work of the Centre for Research on Sustainable Agricultural and Rural Development, Madras.

First, to assist farmers to improve yield in a sustainable manner, a *Biological Software Centre for Sustainable Mixed Farming* is being established in cooperation with the Tamil Nadu Veterinary and Animal Sciences University at Kattupakkam near Madras city.

One Component of this Centre relates to assembling products and processes which can help to maintain/enhance soil health and productivity. The software would include items which can help improve the chemicals, physical and microbiological aspects of soil fertility maintenance.

Some examples of such software are :

- (a) Earthworm and Vermiculture
- (b) Nitrogen fixing trees and shrubs including stem nodulating species.
- (c) Rhizobial cultures, Azolla, Blue green algae.
- (d) Tree species like Neem whose seed cake promotes slow release of applied mineral fertilizer, and
- (e) Plants which help to control nematodes and soil pathogens.

The other components of this Centre would include gene pools for biotic stresses like pests and pathogens, veterinary pharmaceuticals of plant origin, medicinal plants and donors of genes providing tolerance to drought, floods, sea water intrusion and ultraviolet B-radiation.

(Contd. on page 15)

HIGHER EDUCATION

Constraints & Strains

D.A. Ghanchi*

The system of higher education in India is one of the biggest man-making enterprises in the world. We have now around 200 universities, both statutory and deemed, and about 7000 colleges of all sizes and shapes. A student population of nearly four million is being groomed into a adulthood by about 250,000 teachers. And the per capita investment in higher education ranges between Rs. 1500 and Rs. 5500 depending upon the type of course pursued by the student and the institution at which he studies. The expansion of the system after Independence has been almost astronomical.

Of course, the system has grown by way of an answer to the rise in demand, which by itself is the consequence of escalation of expectations on the part of the people. It indicates the faith that the people have come to repose in education as an instrument of change. Perceived thus, the increase in the demand for education, particularly higher education, is an indicator of a healthy civic attitude on the part of the citizens of a democracy, and therefore, deserving all the possible encouragement by the State. And happily, the State has tried to do this remarkably well over the years. Of course, by doing so, the State has incurred the charge which is not wholly unquestionable that, in the process, the primary education sector has received less attention than it ought to have.

In any social system, higher education has to have its due place inasmuch as it provides valuable inputs for intellectual excellence, innovation and leadership which are the basic ingredients for the advancement of society in the modern world. Since 1947, India's higher education has had this agenda to carry out. It indeed has been a stupendous task given the strains and constraints that have been squeezing the system relentlessly. In fact, all through the four and a half decades of India's independence, it has been a virtual struggle of survival as well as growth by the system with the squeeze hamstringing its endeavours on one hand, and the demands of development firing its imagination on the other.

One need not indulge in an evaluative exercise of determining which side won; rather one should make an objective survey of the operation of the twin forces of constraints and strains that results in the squeeze leading to a severe handicap on the process of healthy

development of the system of higher education in the country.

The Constraints

There are five major constraints on the system :

- (i) Philosophical constraints,
- (ii) Cultural constraints,
- (iii) Economic constraints,
- (iv) Operational constraints, and
- (v) Managerial constraints.

The philosophical constraints are subtle but very significant. The beliefs that we as a people of the East have about life, its purposes, and the goals of human existence very much shape our world view and our perceptions of the ends and means of shaping modes of life that should satisfy the inner craving for a supra-mundane realisation.

Superimposed on this essentially native, Indian approach to life and its meaning is the western outlook represented by the British model of higher education introduced in this country more than a century and a half ago, and continued after Independence. It is a historical truth that, though the exterior of the western educated Indian may have been partially westernised, the interior has, by and large, retained its original philosophical moorings.

This leads to philosophical schizophrenia, and it is visible in umpteen number of ways in the contemporary system of higher education. The confusion about the real national goals of education is an example. It is also reflected in our curricula and syllabi that have undergone many an outward change but have not acquired an unadulterated form, be it Indian or Western. The most painful phenomenon is the radarless shunting of the mind of the students and teachers who do not have an exact philosophical goal to approximate through their intellectual exercise.

This philosophical constraint underlies the psychomoral-intellectual vacuum the Indian higher educational scenario suffers from. The agonising part is its manifestation in the meaninglessness of the pursuit in the classrooms and on the campuses. This gets reflected in symptoms like agitations, strikes, work-to-rule movements, boycotts of examinations, etc.

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The cultural constraints are too obvious as witnessed in the peoples' attitudes to each other and towards their work. Anthropologically culture is a very powerful determinant of a person's perceptions of his roles as a member of society and the quality of the acquittal of his role.

We have a cultural heritage of at least five millennia which is both composite and particularistic at the same time. The secular and the sacred are intimately woven in our cultural fabric. The peaceable and violent both strands run through its texture. We have been susceptible to appeals ranging from savage to divine. The former has been more pronounced in our independent era leading to even acts of massacre perpetrated on weaker sections.

Education has been recognised as a potent acculturating force the world over. It is also recognized as liberating and empowering force. But, in order that it fulfils these missions, it must be allowed to operate in a cultural environment of freedom, fairness, and encouragement.

Unfortunately, we are a fractured society with innumerable inhibitions of caste, creed, region, language, gender and vested interests. Not a few decisions pertaining to higher education therefore, are influenced by non-academic considerations. They may be regarding the opening of a new university or a college, or instituting a new faculty or a branch of study, appointing a functionary or nominating a member on a body of a university, prescribing a course of study or recommending a textbook, and the list of such acts can be endless. It is these acts which vitiate our decisions and lead to academic miscarriages.

Take our attitude to work. The standards of performance that we have pursued so far, be they in classrooms, laboratories, examination halls on playfields and even in private academic pursuits have been in the neighbourhood of mediocrity, if not outright poor. The target of excellence has been a far cry in almost all departments of our academic life. The work culture that prevails in our academic world bears no relevance to the looming challenges of globalisation and market-friendly economy that are sought to be introduced in Indian life.

It is these cultural constraints that have dealt a crippling blow to the movement for injecting twin elements of autonomy of action and accountability for results in the system of our higher education. One observable consequence of this is the tardy pace of the implementation of the NEP (1986).

Our *economic constraints* are too well-known to need elaboration, for they affect all our development plans. Ours is a developing economy, still very largely dependent upon labour intensive primitive methods of production in millions of units scattered all over the country.

New technologies are a recent entrant into the field. The productivity of the average Indian worker is much below his potential thanks to multiple causes like poor training, low motivation and lack of appropriate technology.

Consequently, there is a low per capita income leaving little for saving and resultant investment. Whatever little surplus we produce is eaten up by soaring inflation, teeming population and increasing servicing charges of our foreign debt that has accumulated into billions. Social services, including education, have been the first victim of the economy drive in every budgeting exercise of the country.

We vividly remember the panic the recent cut imposed on the UGC grants to the central universities caused. We also know how the late release of even the partial grants to universities and colleges under the eighth plan has dislocated that process of development of higher education projects in them.

Resource crunch is not merely a piece of an economic jargon but it is a terrorising virus that can deliver a mortal blow to any working system of higher education very largely depending upon the state funds for its survival, let alone its development.

It is these economic constraints, among others, that have slowed down the process of qualitative improvement in areas of curriculum reconstruction, examination reform, teacher training, enrichment of infrastructural facilities, student services programme, open learning system, and R & D in higher education. It's a matter of grave concern for us as to how 40% of our colleges that are non-viable will ever acquire a modicum of resources that should justify existence as modest centres of higher learning. It's also a matter of equally serious concern how long the meritorious students from poorer sections will continue to be denied their fundamental right to education by being asked to pay capitation fees for admission and for subsequent continuance in the courses they are admitted to. Indeed, the curse of resource crunch is more devastating than even the divine curse for the gods above are more susceptible to human entreaties and prayers, and they have more bounties at their disposal than the state exchequers have!

The *operational constraints* are the products of human inadequacies. Students and their teachers constitute the core human resource of our tertiary system. They must operate effectively in their respective capacities in order that the primary aims of teaching and learning are realised.

The academic calendar, the courses of study, the programmes of activities, the schedules of examinations and convocation, and the entire interactive gamut of socio-academic life on and off the campus have to be operationalized at the maximum of the installed capacity of all with reasonable regularity, efficiency and commitment. This is the minimum rule of the game.

All the participants in the game have to help the operative process to function at the peak of its health and productivity. But, this does not happen. Break-downs, slowdowns, failures and sabotage are not uncommon, leading to tremendous wastage of time, energy and resources.

The reasons are many, in fact too many. Overcrowding of classrooms, admission of the unfit to colleges and universities, apathetic work force of teachers and para professionals, lack of communication among participants, vagaries of rules and arbitrary fiats, impersonal touch to the whole process of transactions in the classrooms and outside, are but a few glaring contributory factors that build up the operational constraints.

The managerial constraints that plague the system of higher education are a legacy of our colonial past that is ill at ease with the democratic present. For more than a century we have administered education through a culture of command and control at all levels. Participative management as a modern strategy adopted in industry and business is a recent arrival in the field of education. Its induction has been marked by apathy and reluctance, if not outright hostility.

The colonial system of administration generates mind sets that bank upon bureaucratic methods of running an organisation, be it a classroom, a team on the playground, a college faculty or a university body making decisions in respect of personnel, curriculum, examination, materials or finance. These mind sets die hard. They linger on the part of all, those that govern and those that are governed. One typical hang over of this mentality is the craving for a hero, one who takes decisions on behalf of all, executes, evaluates and rewards or punishes.

Modern management science values goals and objectives, plans programmes and strategies on them through participatory techniques, implements them through horizontal and vertical interaction, does collaborative evaluation and leads on to better corporate plans. It is this proactive management that is mostly missing from the system of resources on one hand and non-fulfilment of goals on the other, leaving in the trail a discontented, and frustrated human mass.

Unfortunately, these constraints persist in the system in one form or another and in varying degrees, setting at nought our plans like the NEP (1986) at the macro level and institutional plans for improvement and excellence at the micro level.

The Strains

While the system works under the five-fold constraints, it is also subjected to five-fold strains that further diminish its capability as an instrument of

development of the youthful human resource of the country. The strains are

- (i) Systemic strains,
- (ii) Demographic strains,
- (iii) Developmental strains,
- (iv) Political strains, and
- (v) Ethical strains.

These strains exert pressure on the already fragile system and threaten its very existence. Among these *the systemic strains* are built in the structural organisation of our higher education, which is characterised by the affiliating mode bequeathed by the British. It is strictly hierarchical and therefore, dependent upon a bureaucracy whose work style harks back to the colonial past.

When such a string of structures is exposed to democratic pressures, it generates forces of conflict and repression. Its built in inflexibility makes it irresponsive to contemporary concerns. The result is either a break-down or a total failure.

Many a college and university in India has been experiencing these systemic strains and their first victim is the rule of law that must interrelate various subsystems into a cohesive organism. This does not happen very often, and so we witness the phenomenon of disintegration of the structure. One example of this is the cross purposes at which various constituents of a university or a college work.

The demographic strains are simply frightening, both quantitatively and qualitatively. Institutions and classrooms are bursting at the seams. The result is proliferation of number. It seems the rising tide is unpreventable because the population of the country is multiplying and newer sections of population are entering the precincts of higher education. And recently the Supreme Court of India having declared education of all levels a fundamental right of the citizen, the trend is likely to increase in the years to come.

Qualitatively the first generation learners are increasingly swelling the ranks of college-going population. Gender-wise women's participation is increasing at a greater pace. Region-wise, the hitherto unserved areas are establishing new universities and colleges in a large number. Specialized higher education institutions are also added to the fraternity.

This flood in number and diversity has put to considerable strain the age-old mechanism, its facilities and offerings. The first casualty of this demographic deluge is the quality of life on the campuses and the quality of education imparted there.

system. Higher education is an organic system comprising several subsystems all of which are supposed to be welded into a coherent whole. This can happen only if the developmental process that goes on constantly is a healthy, multi-dimensional process of unfolding and, thereby, of growing healthily.

Because of the five-fold constraints described earlier, and the strains caused by the systemic maladjustments and consequent disorientation, the developmental process comes under severe strain. Take the chief task of teaching and learning which should, ideally, be a joyous experience of "being" overflowing into "becoming". It is virtually limited to a unilinear activity of coaching for passing a test and, thereby, earning a degree without undergoing a rigorous experience of intellectual renewal, of emotional fulfilment and of creative reinterpretation of self.

The development of the self of the youthful learner is perceived in a narrow mould of rote learning, thereby, ambushing the exciting adventure of his learning into a wasteland of truncated experience euphemistically called education.

Neither the teacher nor the student who is in a hurry to pass through the assembly line is concerned with this developmental tragedy he is passing through. Perhaps it is safe for both to maintain the status quo in order that they are spared from the sacrifices they would have to make for transforming the process of education into a rigorous encounter with one's self as well as with the environment of learning.

The political strains of a public system of education are unavoidable, for such education is both a product and a producer of political consciousness of democratic polity. All policy decisions pertaining to education have to be politically debated and derived. The implementation, monitoring and evaluation of these decisions also require people's involvement, and that also is the result of a vigorous political process of public discussion, dissent, decision and mobilisation.

However, it is the negative power-centered, manipulative politics that has exerted incalculable pressure on higher education. Such politics has brought in its wake elements of horse-trading, corruption and distortion of the normal process of law. Consequently, sources of political power and authority have been polluted. Quality of decisions in all matters, be they of appointment of personnel, nomination of functionaries, running of routine administration, organisation of instructional programmes, maintenance of discipline, placement of orders for goods and services, etc. has been adversely affected.

Naturally, politics devoid of values is a lethal agent for an organism like a university. Strains generated by such politics eat into the vitals of the system. The spectacle of the anaemic system of many a university and college in our country is an evidence of this lingering morbidity.

Similarly, the system of our higher education is facing numerous *ethical strains* generated by the social environment of contemporary India. The situation gets aggravated when crass self-interest of individuals as well as of pressure groups supervenes all considerations of law, decency and ethics.

Education is anti-social if it is unethical in conception, in planning and in execution. Students, teachers, managers of education and the community are bound together by certain unwritten codes of ethics. These codes have to be observed under a conscious, moral covenant entered into by various participants in the enterprise of education.

It is our experience since Independence that this covenant is observed increasingly in its breach. It is an impenetrable moral insensitivity that has come to mark our thinking and behaving with respect to higher education. This deliberate attitude strains the system at all levels, leading to an outright compromise on moral issues, whether they be of appointments, curriculum, teaching, discipline or examination.

Squeeze

Higher education in India is, thus, subjected to pulls and pressures of various constraints and strains. They apply a relentless squeeze on the system leading to deleterious consequences like the following :

(i) *Immobilisation* : The squeeze results in immobilisation of thinking as well as acting especially in critical moments. People prefer to be at a standstill rather than on the move, for it is safer to be static than take decisions, and act and undertake risk.

(ii) *Stagnation* : The result of immobilisation is stagnation. The system loses its steam and its joints get stiffened. It begins to accumulate dust and dirt metaphorically, and moves towards pathological state of pre-decay.

(iii) *Routinisation* : The system functions at only a survival level, ruling out initiative and innovation, and manages to carry on at a poor level of efficiency. There is an all round diminution of role and performance of excellence on the part of all.

(iv) *Ad hocisation* : Under a multifold squeeze the system makes do with ad hoc measures to meet with exigencies as and when they arise. There is very little of preplanned crisis management mechanism which is not possible under multiple constraints and strains. An air of *laissez faire*, therefore, pervades in all respects, which if not managed properly, tends to degenerate into semi-anarchy.

(v) *Bureaucratisation* : Education under constraints and strains ceases to be a professionalised system. Instead, bureaucratisation of all its modes of thinking and acting takes place, leading to impersonalisation, rigidity and dehumanisation.

Thus, the state of squeeze devitalises the organism, and at the same time gives it a false sense of survival. We cannot afford to keep our system of higher education in

such a state especially when the demands on higher education for tomorrow's India are changing fast in their range and quality.

Remedies

The Indian socio-cultural system has proved its resilience and capacity to renew time and again. There is no reason why our higher education system should not show the same response in moments of crisis. We need to muster our moral, spiritual and material strength to manage the crisis of squeeze in our higher education of today. Steps like the following can provide remedies to the ailments caused by the squeeze :

(i) *Moratoria* : Strains are caused by systemic disorders. We therefore, need a whole range of moratoria on the factors and forces that cause strains. These moratoria should be declared for a reasonably long period of time. They will cover all areas like expansion of number and size of institutions, proliferation of sub-standard institutions, agitations of all sorts, etc. There must be a will to exercise self-abnegation when the national interests are at stake.

(ii) *Prioritization* : Once moratoria assure peace and orderliness, we should evolve a feasible and realizable scale of priorities for a reasonable period, say till the end of the 20th century. These should again cover all the vital areas of system like goals of higher education, appropriate curricular inputs, teacher learner participation, research and development. Area-wise targets be also defined and strategies of implementation be laid down.

(iii) *Selective excellence* : Let's not aim at the sun, but keep our targets sufficiently high to motivate us to strive more persistently to seek and scale our appropriate peaks. Let's get out of the cocoons of mediocrity and realize standards of achievement comparable to those found elsewhere in our thoughts, ideas, decisions, actions, and even in failures.

(iv) *Alternative modalisation* : We have tried out for long just one mode of higher education, that of formal face-to-face teaching. There are other alternative modes of non-formal and open varieties, that address both teaching and learning. They offer more promises if tried out honestly and perseveringly.

(v) *Social insurance* : All educational endeavours need social support including political support. We need not fight shy of influencing the quality of political decision making in the country, for the direction, vitality and health of education depend, among other things, on those decisions. Let's welcome a rigorous, objective and very close social auditing in return of an enduring and effective social insurance for education. This would provide considerable protection against the strains that the system is undergoing and the constraints that tie down its manoeuvrability.

Conclusion

Education as a social enterprise needs certain qualities of character. We need courage of convictions

and a spirit of adventure. We also need to exhibit self-denial and self-sacrifice in our approach to enlightened self-interest. We need these especially in the context of our country where numerous constraints and strains make education a hazardous mission. It, therefore, requires on the part of everyone of us, the zeal and the dedication of missionary, nay even of a prophet. It is, therefore, pertinent to quote here from a judgment that the Delhi High Court delivered on 29th September, 1992 in a suit involving the leakage of a question paper meant for the entrance examination of the LL.B. Course of the university. The learned judge said, "We would recommend to the university the same road as recommended to the man who founded a new religion : Be crucified, and rise again on the third day."

The learned judge has eloquently and prophetically outlined the path that the universities in India should pursue to deliver their message to the generations to come, a message that will be as sacred as the religion that the great prophet gave the humanity about two millenia ago.

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Professional Development of Teachers

Orientation Programmes and Refresher Courses

R.C. Mehrotra*

Introduction

Although pedagogical training has always been considered absolutely essential for a teacher at the primary and secondary levels, the same has not been required for the lecturer beginning to teach at the tertiary level. Many reasons could be ascribed for this difference. The first one which comes to mind is that most of the teachers recruited for the university system possess a long research experience during which they might be expected to have imbibed the best method of acquiring the existing knowledge on a topic in such an intensive manner which could help them to advance it further by removing the possible doubts and providing a better perspective of the topic. Inculcation of 'Discipline with Dissent' is the most difficult task of a teacher at the tertiary level and these habits could be expected to be better generated through worthwhile research experience rather than through a form of pedagogical training. Another factor which in my view is more important than some pedagogical training for quality teaching at the tertiary level is a real grasp of the latest knowledge of the topic and the enthusiasm of the teacher in inspiring the students to learn more by creating an interest in the subject, by indicating simultaneously the possible doubts or alternative explanations.

In spite of all the above factors, the need for some type of pedagogical training for teachers at the university level has been felt rather strongly since 1950's. With the fast expansion of enrolment of students and opening of colleges in remote areas in a state like Rajasthan with often a single teacher department, the incumbent recruited for the job naturally often feels at sea as he has no example to follow and no senior teacher from whom he could even seek some guidance. Faced with such a situation, the Director of the College Education and the Dean of the Faculty in the University of Rajasthan to which all the colleges in Rajasthan were affiliated launched a collaborative 'Orientation Programme' for new teachers for 4-5 weeks to acquaint them with the general pedagogical requirements at the tertiary level and to give them some ideas of how to manage the facilities (for example, experimental work) particularly in a discipline of experimental science. The present author was even more shocked by the need for some sort of such training in the evaluation work by teachers in

1958 at Gorakhpur University. Having introduced internal assessment as a component of the final assessment of students at the M.Sc. Part I level, practice was adopted of getting the answer books evaluated by two internal examiners independently. However, the sporadic variation noted in the markings of the two teachers in the same department were almost unbelievable. Admittedly these were all young teachers who had joined the University without any teaching/evaluation experience but the habits once formed as exhibited in the above experience, tend to linger throughout life. However, as this aspect of teachers' training has not been emphasised from any quarter, the writer continues to be rather sceptical of our total evaluation system.

The teaching community even in advanced country like USA was shocked in late 1950's by the spectacular success of USSR in 1957. Realising the importance of having a close look at the curricula and teaching methods, a crash programme was initiated for the same in USA by involving the best authorities (even noble laureates) and efficient teachers to formulate a more invigorating curricula and writing textual materials in collaboration both for theory as well as for practical instructions. Although excellent guide books were also prepared, yet the need for an active teacher training programme to cope with the new ideology was not only realized but the programme was implemented in a surprisingly vigorous manner aiming at exposing all the teachers to new curricula in a particular discipline. A powerful body like the National Science Foundation took an active part in the whole programme which was followed on similar lines (albeit with some slight differences) in U.K. also.

In India, the programme of Refresher Courses was initiated by the NCERT for the school level and at the colleges/university level by the UGC through the mediation of an active officer Dr. B.D. Laroia who happened to visit many such centres in USA and UK during the early 1960s. This programme was actively pursued at least in the science subjects in a highly vigorous manner in 1960s throughout the country and the assistance of experts from USA and in some cases from UK was available for our programmes of Summer Schools held in different universities. Having participated in this programme by holding dozens of refresher courses in different fields of Science at the University of Rajasthan, a suggestion was made to the author by an eminent chemist Prof. King of North Western University who was deputed by the National Science Foundation for

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monitoring the programme in India that a stage had come to evaluate the impact of the programme in India also with a view to improve and strengthen it further in the coming years. Being convinced of the importance of the suggestion of Prof. King, I immediately rushed along with him to Prof. D.S. Kothari, the then Chairman of the UGC, who also in his usual enthusiasm accepted the suggestion and took steps for the same beginning with an Indo-US Seminar in Chemistry at Srinagar and Bangalore in 1969 followed by similar exercises in other disciplines of Science in the next 2-3 years. Excellent reports with highly valuable suggestions came out of these bi-national conferences but as often happens in our country, these reports have received very little notice and in fact even the valuable programme of refresher course for teachers was almost given up in the country during the 1970's, in spite of the ever-increasing need for the same all the time.

Enhancing Need for Refresher Courses

As a result of penetrating studies under the general heading 'Science of Science', it has been established on the basis of a number of statistical studies (e.g. the number of discoveries/papers published annually) that knowledge in every discipline is doubling itself exponentially and this 'doubling period' has been estimated to be as short as less than 5 years for fast developing fields like Biochemistry and Biotechnology and about 10-11 years for disciplines like pure Mathematics. The impact of this new conclusion has not been generally fully realized by the academic community and I am, therefore, presenting a few figures in a little more detail. Assuming that knowledge in any field, say in 1950 was 1 Unit (arbitrary), then taking a sufficiently long 'doubling period' of 10 years, the knowledge in that discipline would be as below :

<i>Total world knowledge in arbitrary Units</i>	1950	1960	1970	1980	1990	2000
	1	2	4	8	16	32

The above table shows that whereas in 1950, the teacher/postgraduating student was expected to have command over 1 Unit of knowledge, his counterpart would have been expected to possess 16 Units of knowledge in 1990. This final figure is terrifying in itself but as the total knowledge is expected to become 32 Units in 2000 A.D., the knowledge during the decade 1990-2000 would be increasing at the average rate of 1.6 Units per year. This shows that for a teacher to remain upto date in his discipline, he will have to learn annually 1.6 times the total amount of knowledge which he himself or his counterpart was supposed to have mastered in 1950.

The above is certainly a very challenging situation and might appear almost impossible for an average individual on his own. It is in this perspective that often the qualification of any graduate/postgraduate is now-a-days considered to become almost obsolete or incom-

plete within a period of 5 years and hence in addition to his individual continuing efforts particularly with the help of ever-increasing review articles, etc., it has become essential for some sort of refresher courses/training after every 5 years. This would apply equally well to professionals in any field of human activity but should be considered absolutely obligatory/inevitable for those in the teaching profession.

In addition to the above exponential growth in the quantum of knowledge, revolutionary advances have been taking place in the means of communication/dissemination of knowledge which have provided extraordinarily effective and novel techniques for the teaching/learning interactions. For example, besides the use of slides/projections and audio/video films etc., the capabilities of computers are becoming available in various forms. Fortunately, the students even at the school level in our country also are now being exposed to some form of training in the use of computers and hence, many of them are prepared mentally to take advantage of learning through this powerful facility, which is becoming more and more effective every day. As far as I am aware, very little emphasis, if any at all, has been given to these aspects of emerging 'Educational Technologies' in our refresher programmes for teachers and it is high time that attention is paid in such directions also.

Mehrotra Committee and Academic Staff Colleges

Having had the privilege of enjoying first hand thrill of such refresher programmes for a long time, the committee constituted by the UGC and the Government of India under the Chairmanship of the author, mainly for proposing changes in pay structure of the teachers at the tertiary level, reemphasized the need of refresher courses for the teachers in all the disciplines as a part of their professional advancement with a view to attract and retain the best talent in the teaching profession under the second term of reference for the above committee. It may, therefore, be appropriate to reproduce here some of the recommendations of the above committee on the topic of 'Professional Development of Teachers' :

"The Committee is of the view that at present our academic system seems to be unfair to the teachers insofar as it does not have a proper and comprehensive provision for their professional development. It is imperative to create opportunities for career and professional development of the teachers and provide incentives for good work. The following steps are suggested to attain this :

Orientation Programme for New Teachers

In view of the small annual intake of new faculty earlier, pedagogical/professional training was not considered essential or feasible for the teachers at the tertiary level; they were expected to get trained

on the job under the supervision of their senior colleagues. However, with the rapid increase in numbers and unplanned growth of colleges in far flung places and also in view of the fast developments in educational technology, a programme of orientation courses for the new entrants to the profession appears to be highly desirable. These courses (3-4 weeks duration) should be specifically designed for the new entrants before or soon after they start teaching. The main emphasis should be on developing methodologies of teaching in the concerned subject.

Refresher Courses for Teachers in general

Further, the extremely fast growth of knowledge in almost all disciplines has necessitated arrangements for refresher courses of longer duration (about five weeks). These should be so scheduled that every teacher is exposed to at least one course in a number of (say 5) years. These refresher courses should focus upon two main facets :

- (i) exposure to newer materials, and
- (ii) better ways of disseminating the existing and new knowledge.

A system should be evolved for mutual evaluation of the participants and resource personnel in the refresher programmes. Incentives like additional grants for preparation of teaching material and research could be provided for consistently excellent performance. The performance at these programmes should be considered at the time of promotion.

The organization of orientation/refresher programmes on the vast scale envisaged by the Committee must receive a very high priority by the U.G.C. in view of their crucial importance for raising and monitoring the standards of teaching.

The Indira Gandhi National Open University should be requested to provide for a variety of courses, in as many disciplines as possible, to encourage continuous self learning process amongst teachers. To enable the teachers to take advantage of such courses, the registration fees and other required inputs should be provided to them.

Participation teachers in seminars, symposia and conferences should be encouraged and facilitated.

Adequate facilities should be provided to teachers (giving preference to younger faculty) for study leave with pay and/or teacher fellowships etc., to enable them to pursue M.Phil/Ph.D. programmes, which should be strengthened and restructured so that these provide useful inputs in improving their capabilities as teachers."

Academic Staff Colleges and the Role of Distance Education

It is a welcome development that the Academic Staff Colleges have been established in 47 institutions. However, a continuous review of their functioning and achievements as well as points of weakness are essential in improving continuously challenging programmes of this type. For example, attention may be drawn towards a review of the orientation programmes of Academic Staff Colleges by M.M. Rahman and K. Biswal published on pages 11-15 in March 30 issue of the 'University News'.

It appears that the hands of IGNOU have been too full to give attention to the recommendations of Mehrotra Committee for providing leadership in the field of continuing refresher courses for teachers through the Distance Mode of Education. Naturally the other open universities in the states as well as the correspondence institutes of various universities have paid hardly any attention in these directions.

It is almost obvious that the distance mode of education is highly appreciated and could be much more effective in providing facilities to the teaching community to go on adding continuously to their vista of knowledge. Hopefully as reported for the Open University in U.K., its broadcasts and televised programmes have proved highly beneficial to many other sections of the society in addition to the students directly enrolled with the University. Although no survey has been made in India, yet it is to be expected that our teaching fraternity has also taken advantage of such programmes from the IGNOU as well as the UGC.

In view of the high multiplier effects of any improvement in the store house of knowledge of the teachers, it is high time that well planned programmes should be initiated through distance mode of education for the benefit of the teaching community both in pedagogical aspects as well as in the subject matter contents. This will have an additional advantage of providing a continuous learning programme for the teachers without the need of necessarily taking periodical leave for participation in the refresher programmes.

With the introduction of the distance mode of education, the face-to-face refresher courses could be of shorter duration and may be better focused around activities of the following types :

- (i) introduction of some difficult topics (like that of thermodynamics in Chemistry) by different participants and resource personnel, followed by a discussion of the effectiveness/weaknesses of the individual presentations – thus providing some form of so-called practice teaching in conventional pedagogical programmes;
- (ii) discussion on the current curricula, etc.; and
- (iii) working out together some new experimental instructions in the field of science and more relevant examples from relevant regional/national background in social sciences.

Futures in Higher Education

Prospects and Strategy

M.S. Sodha*

B.K. Passi**

Today is good time for exploring the preferred and possible futures of our society. It is also the time for taking a look at the futures of higher education and also to see which way the university education in general and our university in particular, would be advancing. We are mentioning a few points which at the moment may seem chaotic, but they are certainly of great importance as agenda for consideration to the perceptive mind.

1. One of the ideas that we are very keen to introduce is that we should try to *Export* our expertise in education, to all the neighbouring and far countries, who need it. One of the most undisputed capabilities in which Indians are very good at is teaching. We do have a galaxy of very good teachers. It is remarked by some of us that we might not have produced many quality products; we might not have shown excellence in research but as regards our teaching, it is generally agreed all over the world that we have something to give in the form of good teachers. The authors believe that we should use this talent for general welfare. We strongly feel that our university should set up new programs and institutes for all kinds of education including the professional. If need be, new institutions may be set up in collaboration with other universities and colleges or even local populace. These institutes can be located both in India and abroad. The establishment of the new institutions would earn a lot of goodwill for us from the neighbouring countries and will also support our own educational programs by bringing in revenue as well as valuable experience.
2. The futuristic higher education should introduce the popular concept of *life-long and continuing education for all*. Many commissions and people appreciate it but unfortunately noticeable action in the field is still awaited. Life-long education demands that our university must act as a vital agency for continuing education for all at all times. It would mean that a futuristic university should not

limit itself to the conventional needs of young professionals but should also provide for the emerging needs of elderly engineers, executives, administrative officers, and all other types of evolving professionals. The scenario of future occupations is going to change. The industrial and service sectors are expanding and transforming their own structures and functions. The management of increased diversity of human beings is going to monopolize future occupations. Therefore, one of the futuristic needs is management of intelligent and professional human beings. This demands that in the area of future management of people (particularly professionals), we should be proactive.

3. Through *modular approach* we should extend our educational facilities to all those who need it; these facilities may be organized both with or without academic credits. It may not be in the form of a full program. If a participant completes a certain number of modules, we can award a certificate, a diploma or a degree. And this facility need not be limited to the students of Indore or its vicinity. We can cooperate and collaborate with other institutions in providing this continuing education facility to any one, any where. For example, the practical part of many of such programs could be practised in the factory or the business offices itself, while the theoretical part can be undertaken as a lecture, as a tutorial, and or as a library exercise in the universities. The evaluation of the students, tutors, and the programs could be undertaken jointly. There is no reason why every credit and grade awarded has to be executed in the university alone. We should delegate responsibility and involve other collaborating institutions in this process of education.
4. The fourth point is linked with the concept of *area development* by the universities. It demands that the programs of a university should be linked with the soil on which it is placed. It cannot be accepted that an educational institution is exclusively serving extraneous goals beneficial to distant communities. The institution cannot function without its own time-space framework. For example, if by magic a university is shifted somewhere else in a different environment then obviously its programs have to be modified and transformed so as to serve the new

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milieu. It cannot continue doing the same old things for the same old community. Universities have to develop local sensitivity. This is the only way we come in contact with live problems. The development of society needs input for all kinds of problems starting with provision of services, implementation of programs, collecting feedback, designing refined technologies, and creating alternative options for development. The university could be involved in case the developmental programs are run either with the government help, or self-help or combination of both. The university should play its role in any of the forms and emphasis. We should involve our students and invite their contribution in the developmental programs. We should give them grades as far as their study courses are concerned. In fact, some of the educationists are emphasizing the introduction of such a novel concept of work experience which will lead to area development on one side and enhance the quality of higher education on the other. This point is important and looks feasible.

For example, in the MBA program of Devi Ahilya Vishwavidyalaya, the students are placed in a productive job, from day one. Apart from the developmental aspect of the job, the student gains a realistic perspective of the business environment. The student develops practical skills in the field and he conceptualizes the theoretical concepts in the classroom. Thus there is a live and continuous interaction between the real world and the academic world. The end result of all this is a better training which utilizes all the sophistication provided by a good classroom environment and the real experience that one gains in the field. Suppose, the field and classroom experiences do not go together, then the chances of interaction are reduced. One goes on adjusting and accommodating the two types of experiences. He becomes accustomed to existing realities.

5. Fifthly, we wish to propose a novel concept of *responsible networking*. We believe that networking in education, is very important especially when we are short of financial and human resources, and yet we wish to provide diverse programs. How do we go about? Suppose, we want to develop a responsible networking for offering a program in an interdisciplinary field. We may have to find a national laboratory, we may have a few volunteer industries, we may have cooperative universities which can collaborate to accomplish different components of a proposed academic program. We visualize that all these identified organizations will pool up their strengths, and try to award a degree by letting a candidate spend his time at different places. If the student does some thing by self-study, which is

creditable, we propose that he should have an opportunity to earn valid academic credits. We believe that the key to success of such a networking is flexibility. As long as we are sure that the student we are turning out is good, is useful to the society, has high intellectual flexibility to deal with a problem, we should not worry too much about what he has read and where he has worked. The only thing we should worry about is that the finished product is useful to the society. How it comes about should be certainly a very flexible exercise.

6. Sixthly, we are interested in the *autonomy* of the colleges and new types of association between the university and the colleges. Today one thing is very clear that the colleges or professional associations are affiliated with a university and not governed by the university. We believe in the equality of bidirectional relationship. We assert that there is no question of one directional relationship between these colleges and the university. The colleges should have their uniqueness and autonomy. The colleges must be autonomous both academically and financially. Along with this we have to make sure that the colleges can take complete advantage of the autonomy. We do not want an autonomous college to be a replica of a university. The autonomous college should not look like a mini university with its Principal being the Vice-Chancellor and its Head Clerk being the Registrar. The idea is that an autonomous college must be able to conduct educational experiments. The college must be able to come up with novelties. The college must be able to generate its speciality or provide a kind of training which is acceptable to the society.

However, we believe that nobody is academically autonomous till one is *financially autonomous*. If we depend upon the government then certainly the autonomy is very limited. We are governed by what the government officials or what the government in power thinks is important. And this may not match with what we think is important. So we have to build in a component of financial self support. Now how do we build it. There are different ways to find finances for attaining financial autonomy.

One way is that we increase the tuition fees to a moderate level, which means the fees should keep pace with the cost of living. The other way is that we try to develop new programs, which are job oriented, and professional in nature, and for which there is a demand. How do we go about? We keep certain seats available for some top meritorious candidates for whom the fee should be moderate. Then some other seats could be earmarked for eligible people, who would pay high fees. This group would include the NRIs, foreigners or the NRI supported Indians. If we do not provide such a facility, this group of students can always go

outside India, and spend much more and cost us scarce foreign exchange. So instead of earning foreign exchange we lose foreign exchange. Also, we may note that the top meritorious people giving moderate fees can be supported by our own internal resources. In other words, we will not be able to provide benefits of education even to our top meritorious people. So we have to now choose between two options: either not having a normal job-oriented course or by having half the people on merit and the other half people on the basis of their willingness to pay; the whole course package becomes a viable program.

We visualize that a few scholarships should be provided to real talented people so that they are not bruised by our quest for self sufficiency. Such a scheme of scholarship is desirable when examined both from the economic and the human development angles. A university will ultimately be known by the best produced talent. We think that a good student even if he does not pay the fee is much more useful to a university than an average one who has to pay. So this group of real talented students should not leave the university under any circumstances. The other way of generating financial resources is that we should invite banks to join us in a big way and finance these courses in a university. These two twin approaches would be very satisfactory for financial and academic aspects of higher education.

Shortage of adequate funds can kill teaching, research, entrepreneurship, creativity and many aspects of higher education. Apart from the available support from different sources the university should be able to raise its own finances. There are a few ideas one can tap. One is that we can offer attractive programs for which we can charge adequate fees particularly from foreigners and non-resident Indians or non-resident Indians wishing to support their friends and relatives for these programs. The other avenue of generating our own resources is through a much more respectable channel of sponsored research and consultancy. There is plenty of scope for these activities to expand in most of the universities. We have to encourage faculty members to bring in research projects and consultancies. The third avenue is to undertake materials and services production activities which the universities can produce cheaper and better. The fourth avenue of generating funds could be through a challenging work of exporting education. As we have said earlier we should be able to go to the neighbouring countries, help in their educational programs, and offer our educational programs there. Even that can be done in collaboration with the willing universities of the

West. We can do part of the job here and they can do the rest of the job there. So the whole idea is that we have to learn to get together, and link ourselves with others. However, there is no problem if one wants to work alone and seize the opportunity that comes. As far as our university is concerned, we would like to utilize all these features.

7. We want to talk about *liberal jurisdiction* which encourages competition between colleges and universities and between the links that the colleges would like to develop with the universities. The first step in this direction would be to drop the concept of assigned jurisdiction within given geographical areas. It would imply that any college can be affiliated to any university, and any private candidate can appear in his chosen university. A university can offer any kind of course that they wish; which means that we should not have monopoly of some universities offering a given course. We really want to generate a healthy competition between the universities for attracting students and also affiliated colleges. We want that the universities should conduct their admission tests and offer their courses to all those whom it considers desirable. The students should be free to choose. If we drop the prevailing system of jurisdiction, one would see very soon, that the inefficient universities, and the useless course would perish. The principle of survival of the fittest should operate in the case of colleges and the universities also.

8. We wish to encourage *excellence and flexibility* in our university. It has two features. One is that all the areas in which we wish to excel should lead us to become a professional university. It would mean that the nature of our future programs should be professional. Secondly, all the programs have to be heavily inter-disciplinary. We have to make our courses a lot more flexible so that one is forced to take things outside. And then and only then can we bring in fresh ideas in the university. In short, the university is to keep open particularly in its thinking. The university need not be afraid of chartering new courses and entering into new areas. And lastly, the university should produce people who are needed by the society. The university should explore areas and guide the destiny of the nation.

In fact, we should design a mechanism to solve an ever perennial problem of *outdated programs* in higher education. We ought to review our academic programs and the courses on a continuous basis. Right now, it seems that an academic program or a course once offered continues for infinite number of years. We think there should have been a built-in mechanism wherein an academic program

or a course has to repeatedly prove its worth during its respective reviews, otherwise it will be discontinued. And even if it is allowed to continue, there have to be modifications or a lot of changes made to keep pace with the experience and in-field knowledge. We all talk about it but we forget those days when the syllabus was really revised.

9. We visualize that the future technology may change the appearance of the university completely. With the *distance education* technology we should be able to offer any program to any body at any time. It should be possible that some body dials to an information network for listening to a lecture at midnight and that requested lecture is reproduced on the video panel of the dialing person. He may not go to the university. Even if he has to conduct experiments, he may have computer controlled experiments so that he conceives a few patterns in his home and receives the result on his home screen. He can ask a few questions from the live teacher attending to the network. Next day the teacher can reply to such questions and this reply

can be retrieved by the dialer. So a future university could be substantively different from a university as we know it today. But one thing is certain that, at any time, a university will be known only by its width of scope and excellence of its activities.

10. Lastly, we wish to say that *basic research in sciences* and action programs are complementary to each other. The emphasis on teaching of need based courses of high local relevance does not preclude us from making advancement in basic research. There are many forms and levels of relevant basic sciences and not-so-relevant basic sciences. We can always choose areas of our interest and we get a whole range of activities, ranging from basic research to applied research to proto-type production, and licensing of products. We can see that good-times and very big opportunities are waiting for us. We cannot grab these opportunities, sitting where we are. These are not going to be gifted to us from outside. We have to move and grab wherever they are. We must soon shun the culture of 'sab theek hai' and move ahead.

Magna Charta of Universities

(Contd. from page 3)

The Biological Software library could provide the most appropriate material to users, depending on the nature of the soil and farming system.

Second, a *Genetic Resources Centre for Adaptation to Sea Level* rise has been established at Pichavaram near Chidambaram in Tamil Nadu jointly with the Tamil Nadu Department of Forestry and the Department of Biotechnology of the Government of India. This centre will concentrate on assembling specialised gene pools including Mangrove species and sea grasses which may provide genes conferring tolerance to sea water intrusion for use in recombinant DNA experiments.

Third, a Biovillage programme has been initiated in Pondicherry in collaboration with the administration of Pondicherry for incorporating appropriate biotechnological innovations in current practices in order to combine the ecological and economic strengths of both. A methodology has been developed to ensure that the benefits of biotechnological enterprises reach women and landless labour families.

These few examples would help to indicate that opportunities now exist for imparting a pro-environment and pro-poor bias in scientific work. Modern information technology enables the packaging in an integrated manner farming system-specific meteorological, management and marketing information. Rural families

can be reached through a computer-aided extension system. Ecologically sound technologies involve the substitution of knowledge for chemicals and capital and hence an effective information system is vital for promoting sustainable agriculture.

Our universities individually and jointly, can initiate faculty-student projects designed specifically to providing such scientific services to the rural and urban poor. Science will then assume a powerful social purpose.

The flame of inter-University partnership lit by the University of Bologna on the occasion of its 900th anniversary needs to be nourished and supported like an Olympic torch. This timely initiative reminds me of a verse written by Ranier Maria Rilke in 1899:

"Again & Again in History

Some special people wake up

They have no ground in the crowd

They move to broader laws

They carry strange customs with them

And demand room for bold and audacious actions

The future speaks ruthlessly through them

They change the world."

Thy Worst Enemy

"I would like to ask how many of our educated women even today treat their sons and daughters equally in their families. How many of them get their sons and daughters married without dowries after all their education? In fact the more educated the son the higher the dowry that the mother claims; nobody else. Who is the one who creates the maximum problems for the daughter in law in the family? We talk of dowry deaths. Where are the educated women in our families who are prepared to stop this crime against women?" asked Mrs. Margaret Alva, Union Minister of State for Personnel, Public Grievances and Pensions. Mrs. Alva was delivering the Convocation Address at the fifth annual convocation of Mother Teresa Women's University, Madras. Excerpts

Look at this situation particularly of women around our country today. Almost 45 years after Independence, we still have illiteracy, malnutrition, exploitation and discrimination, Offences of rape, dowry deaths, violence in the home and outside. Repeated child births, over work and neglect of their health care requirements puts them amongst the highest mortality rates in the world for women and lowest literacy figures for them. Do we really feel concerned? Do we as young educated women after our research, our studies and all over examinations feel and are prepared to be involved? Do we have the courage to be counted among those who have to strive to change the situation for women around us, around the world but most of all in our own country. There are two diametrically opposite views about women which are repeatedly expressed in this country. One view is that women are weak, they need to be protected. They must be kept at home. They must be looked after. In the tradition of Manu, she is the daughter, the wife, the mother to be protected, to be looked after and to be cared for. The other is – we worship them. We make them into goddesses – we have Lakshmi, we have Durga, we have Saraswathi, we have them all. What more do you want? You are the goddesses we worship. I have repeatedly been saying the

reality is neither of them. All that happens is that we are either made into stone statues and expected to be the perfect women that they would like us to be or in the name of protecting us we are exploited. I was in Nagaland sometime ago, in connection with an election campaign. I spent three weeks there and I used to go into the villages, down the hill sides and up, and day after day I used to watch people coming back from the fields; the woman in front, a baby tied on her back, a bundle of wood on her head, vegetables in a bag in one hand and other requirements in the other hand walking up the hill side with the man walking behind her with the stick to support himself. After seeing this for many days, I one day got down from the Jeep and I stopped a couple and I said to the man, are you her husband? 'Yes' he said very proudly and I said is that your child, he said 'yes'. I said you watch this weak woman, your wife carry all that burden and walk up the hill side while you walk empty handed with a stick to support you. Is that fair? and he turned round to me and said 'yes, my hands have to be free to protect her from danger'. This is what I say has been the theme of protection of women;

that in the name of our being weak we have always been exploited.

Friends, we have the Constitution, we have the guarantees, we have legislation, we have any amount of reports, I heard about all the research projects that have come out of this university, we have commissions – now the National Commission for Women, we have family courts, we have the development corporations, we have well, you name it and we have it in this country. We have tried to create an infrastructure in which women can be protected, can be helped, can move forward. The New Education Policy which was the dream child of our late Prime Minister, Rajiv Gandhi, and the theme which he insisted on was education for equality because the equality that we talk about in the Constitution does not start with education. There are boys and girls who are given an equal opportunity and taught right from the beginning that they are equal, that there could be no change in society outside. And yet with all these thousands of young women who pass out of institutions of higher learning today, what is happening? Have they brought about much of a change in our social thinking in our living or even in our attitudes within our families. After almost 45 years of planned development – how much of the benefits have gone to women. In what way have their lives really changed? This is the question perhaps which sitting in this beautiful Hall in this famous University of Tamil Nadu, I would like to ask not only you but the women of this country? Where have all our educated women gone? Why do we go out of our institutions and still believe in retaining this status quo? It is because we are afraid? Is it because we are indifferent or is it because we have never really thought about it? Each one of you goes out with the lamp that is lit in the darkness around you. Do realise your responsibility as educated

women coming out of institutions like these.

We still have millions of our sisters who can't read a line, who can't sign their names, who can't read a post card may be from their husband or their sons somewhere far away. The meaning of literacy and the empowerment of women are something which have to be understood and which have to be appreciated. I would like to ask where are all those bright young scientists, engineers, doctors, sociologists, women research people whom we have produced. Yes, many of them are struggling in many places. The best perhaps have gone abroad, many many more have gone out and are satisfied with falling into line and carrying on with their lives. I would like to ask how many of our educated women even today treat their sons and daughters equally in their families. How many of them get their sons and daughters married without dowries after all their education? In fact the more educated the son the higher the dowry that the mother claims; nobody else. Who is the one who creates the maximum problems for the daughter in law in the family? We talk of dowry deaths. Where are the educated women in our families who are prepared to stop this crime against other women? What had happened to the development of science and technology. The development of science is leading to the destruction of the female foetus by the mother herself through the most modern scientific methods. Do these women consider it their duty to be involved in any kind of activity that can help to change the lives of other women around them? I would like to ask how can we expect to change the situation for women unless we edu-

cate women ourselves are prepared to stand up and be counted. To speak out from the heart; to work and be followed. I do not say that every one of us has to be a Joan of Arc. or a martyr on some platform. Each one of us is called upon as an educated woman whose mind has been freed, to whom knowledge has come to look at life with a new angle, with a new commitment, with a new perspective. If education is just passing examinations, coming to a Convocation and going away with beautiful pictures of yourselves on your convocation day carrying your degrees home and then framing them and then saying.... I have finished my studies, thank God, now I can rest in peace. If that is the attitude, I think as I said at the beginning, all the efforts of all these distinguished women and men who have spent their time training and educating you perhaps has been a lesson in futility. Therefore, I would say to you please understand the meaning of your education. Free your minds from the bonds and the shackles of ignorance and of many

traditional beliefs which have no value today. I am not saying that all tradition is to be given up; I do not say that copying the west is the answer to our problems. I have always condemned these practices. But I believe that one has got to have the courage sometimes to question certain things which we have accepted for too long as part of our Karma or part of our life. The time has come for us to ask how can things change, of who will change them and then decide whether or not each one of us is called upon to be instruments of change.

Therefore I would say to you young women go forth as women of courage and conviction; of commitment and compassion; as women of character worthy of this great institution, your alma mater in a spirit of service and sacrifice. Be prepared always to pay the price, if you must, but be agents of change and instruments of women's liberation. Only then will you be worthy to be called the daughters of this great institution and the makers of a new India.

University News

Wishes

Its Readers

A

Happy New Year

1993

Development Information Network for South Asia (DEVINSA)

Mr. Pranab Mukherjee, Deputy Chairman, Planning Commission, recently inaugurated a workshop on the Development Information Network for South Asia (DEVINSA) Database, Regional Cooperation, Resource Sharing and Networking at the Jawaharlal Nehru University. Over 100 delegates representing various institutions engaged in the socio-economic studies, newspapers and information data centres participated in the workshop.

In his address Mr. Mukherjee stressed the importance of cooperation among South Asian countries for the overall development of the region and said that DEVINSA which was involved in creating a database on socio-economic developments could play an important role in strengthening cooperation among the countries in the region.

Mr. Mukherjee said that knowledge and socio-economic development were inseparable and the application of scientific, technological and social information was the key factor, which determined the progress of a nation. He said that the network could provide its users much more and timely information on current development activities in South Asia in order to bring about greater collaboration between researchers and avoid duplication of efforts.

Mr. Mukherjee expressed the hope that in the workshop, a number of new ideas would emerge on technical and management issues which would enrich the functioning of the DEVINSA programme.

The JNU Vice-Chancellor, Professor Yoginder K. Alagh, who presided over the function, said the JNU administration would try to provide all possible help and support required for the project.

The Development Information Network for South Asia (DEVINSA) was set up to develop a database bibliographic information on socio-economic development in the South Asian countries and to provide services from it. The network presently covers Bangladesh, India, the Maldives, Nepal, Pakistan and Sri Lanka but will eventually include the others too.

One of the main purposes of establishing this network and creating the database is to bring into bibliographic control unpublished literature produced in the South Asian region on the broad area of social and economic development. Thus the main focus is on documents such as conference reports, reports to government and other development agencies, published and unpublished articles, theses, dissertations, research reports, working papers and technical reports, which seldom get into bibliographic control. Even though few of them may eventually be published, there is bound to be considerable time lag. In addition, relevant documents published locally and elsewhere are also included.

Rural Studies Centre at Kurukshetra Varsity

The Kurukshetra University has established a Rural Studies Centre with the assistance from the UGC to conduct researches for the development of Rural areas. The UGC has given rupees 5 lacs to start the centre in the first instance.

The Centre will conduct studies to achieve the following objectives : (1) To make efforts for the upliftment of rural people particularly rural poor and weaker sections of

rural society; (2) To activate the participation and involvement of rural communities in different rural development programmes; (3) To conduct studies of various rural development programmes and find out their weaknesses; (4) To prepare models for village level planning and administration for the development of rural areas; (5) To establish linkages with different developmental agencies/departments including voluntary organisations for rural development; (6) To collect data, information and learning material relating to rural development; (7) To conduct action oriented research relating to the needs and problems of rural sector; (8) To run the courses on rural development, Panchayati Raj and democratic decentralisation; (9) To assess the impact of irrigation and land reforms on rural development; (10) To know the pattern of interaction between politics and development administration at village level and their impact on development; (11) To study and find out the causes of rural poverty and unemployment and suggest measures to overcome them; and (12) To impart training to the functionaries involved in rural development programmes.

Low Cost Chemical Instrumentation

A one-week workshop/Refresher Course on Low Cost Chemical Instrumentation for University teachers from South Asian Countries was recently organised by UNESCO in collaboration with the Centre for Professional Development in Higher Education, University of Delhi. The workshop was inaugurated by Professor Upendra Baxi, Vice-Chancellor, Delhi University. Mr. J.V. Kingston, Director, ROSTSCA and UNESCO representative to India presided over the inaugural session of the workshop. Delegates from Bangladesh,

hutan, Maldives, Sri Lanka and India, participated in the programme.

The salient features of this programme were to acquaint the participants with the basic principles of electronics, its applications in designing circuits for low cost instruments, handling and maintenance of these equipments which are cheap, versatile as well as safe. The workshop was followed by educational visits and orientation to use of computers in chemical education. Participants were given due opportunity for handling the computers themselves.

One of the important aspects of the UNESCO Projects is the dissemination of the Locally Produced Low Cost Equipment (LPLCE) knowhow at the international level through systematic teacher training programmes, and curricular changes. Participation of teachers and students ensures that the equipment is tailor made for different requirements, generates confidence and expertise in instrumentation. These equipments and training programmes are essential inputs for developing science culture as well as for the improvement of science teaching in developing countries. Such programmes have been conducted in more than 30 countries including India.

To coordinate the activities of different centres and to extend the geographical and academic scope of the work done so far, UNESCO has now set-up an International Network for LPLCE.

UNESCO, UGC, CPDHE and University authorities extended due cooperation for successful completion of the course. The LPLCE network will be expanded in U.P., Maharashtra, and Karnataka under the leadership of Prof. K.V. Sane, Chairman, IUPAC (CTC).

Railway Freights and Economic Development

A two-day seminar on 'Rail Transport Pricing and Economic Development' was recently organised jointly by Jawaharlal Nehru University (JNU) and Railway Fare and Freight Committee (RFFC), Ministry of Railways. Delivering the keynote address Dr. Y.P. Anand, Chairman, Railway Board, emphasised the need to generate internal resources by the railways, particularly due to the declining budgetary support from the Planning Commission. He argued that the rates for various services must be based on appropriate costing. He also emphasised the need for improvement in managerial efficiency and facilities for R&D developed within the country.

Prof. Y.K. Alagh, Vice-Chancellor, JNU, who presided over the inaugural session, highlighted the distortions in the regional structure of the country due to the wrong pricing policies adopted by the railways. He welcomed joint research ventures of different schools of the university in collaboration with government bodies to make research more meaningful.

Dr. Nanjundappa, Chairman, RFFC recognised the complexity in determining the freight and fares due to the need of mobilising resources, and meeting the social obligations. Prof. Amitabh Kundu while introducing the seminar argued that the Railways must share the responsibility of curbing inflation and reducing regional disparity by carrying certain essential commodities at subsidised rates particularly during the period of economic liberalisation.

The seminar deliberated on the issues relating to pricing of bulk goods traffic, general goods traffic, passenger traffic, suburban services etc. and considered different sug-

gestions for meeting the increased demand for current and capital expenditure.

Special Literacy Camps

NSS Co-ordination Cell of the Gujarat Vidyapith organised a fifteen-day Special Literacy Camps in 8 villages of three talukas of Gandhinagar, Dholka and Dahagam of Ahmedabad and Gandhinagar districts. 95 NSS volunteers, 85 local youths and 50 teachers joined these camps.

The village panchayats, co-operatives, schools and local women and youth groups were actively involved in programmes of the camp.

Creating awareness of the people in development programmes under 8th five-year plan, conducting adult literacy, post-literacy campaigns, organising health check-up of the people and cleanliness campaigns, demonstrations of constructing low cost toilets and Bio-gas units, construction of soak-pits and smoke less chullas, were the main features of these camps. The students also explained advantages of Sardar Sarovar Project of Narmada River in the context of removal of acute scarcity of drinking water.

In concrete terms following targets were achieved :

- 2,500 illiterate adults attended cluster based literacy classes run by the NSS volunteers.
- 750 literate adults attended post-literacy classes.
- 1,500 saplings planted.
- 2,690 farmers attended lectures, demonstration and guidance sessions on low-cost agricultural technology; animal husbandry; live-stock care; better methods of grain storing; documentary films, slides and cultural programmes.

- 1,250 women of the nearby villages participated at 3 women meets held on women empowerment; women literacy; Population education & environment sanitation.
- Rs.1,85,000 worth earth work, road repairing, playground levelling, removing encroachments and sanitation facilities.
- 105 Soak-pits constructed.
- 16 variety entertainment cultural programmes held involving mass audience from the nearby villages.

National Library Week

Satyanand Stokes Library of the Dr. Y.S Parmar University of Horticulture & Forestry, Solan (H.P) organised the books and Paintings Exhibition on the occasion of 8th National Library Week. The exhibition was inaugurated by Dr. B.R. Sharma, Vice-Chancellor of the university.

In this exhibition, paintings of children of various age groups from 3-4 to 15-16 years from many countries of the world were displayed. The exhibition also included books for children, books and other reading material on different disciplines especially - Forestry, Environmental Sciences, Ecology, Horticulture, Floriculture, Computer, etc. The original paintings were received from the Children Book Trust of India on returnable basis from its collection of international competition - which it organises every year for the children of the world.

CEC Fellowships 1993-94

The Department of Science and Technology invites applications for Post-Doctoral Fellowships offered by the Commission of the European Community for 1993-94 to provide

the selected Indian scientists and technologists with an opportunity to work in frontier areas of science and technology and to familiarise themselves with the latest development. The applications have been invited from qualified Indian scientists, residing in India, for carrying out research work in laboratories/Institutions of the member states of the European Community. The subject areas include (1) Agricultural Science (2) Biotechnology (3) Chemical Sciences (4) Engineering Sciences (5) Environmental Sciences (6) Earth, Atmospheric and Marine Sciences (7) Life Sciences (8) Physical and Material Sciences (9) Mathematics & Computer Sciences (10) New and Renewable Sources of Energy.

The application forms can be obtained from the Section Officer, International Division, Department of Science & Technology, Technology Bhawan, New Mehrauli Road, New Delhi-110016. The last date for submission of application forms by registered post is 15 January, 1993.

Meghnad Saha Award for Prof. Agarwal

Prof. Girish Saran Agarwal of the School of Physics, University of Hyderabad, has been awarded the 'Meghnad Saha award for research in theoretical sciences' of the Hari Om Ashram Trust for his outstanding work in the area of quantum optics. He has been successful in predicting a number of rabi type linear and non-linear resonances in the laser cavity radiation which have been checked later by experiments.

Courses in Special Education

The Department of Special Education, S.N.D.T. Women's University, Bombay has introduced Teachers' Training Courses for

teaching the handicapped for women graduates. The courses are B.Ed. (Spl. Edu.) - Full time one year course; M.Ed. (Spl. Edu.) - Full time one year course; and P.G. diploma in learning disability - Part time one year course.

The application form for admission will be available in the department from January 20, 1993 and entrance examination and interview will be held in March 1993.

Further information may be obtained from the Department of Special Education, S.N.D.T. Women's University, Juhu Campus, Bombay-400049.

Science & Islam

The University of Kashmir recently organised a three-day seminar on Science and Islam. The objective of the seminar was to provide an opportunity to young students to understand Islam and its relation with Science.

Inaugurating the seminar, Prof. Hamidi, Vice-Chancellor, said that Islam had contributed a lot for the development of modern science. Prof. Qazi Ghula Mohammad in his keynote address explained the contribution of muslim scientists especially in the field of Mathematics. Papers presented at the seminar included: Modern developments in life science viz-a-viz Islam; Use of some medicinal plants by Prophet (SAW); Contribution of Muslims in the development of medicine; Scientific methods and Islam; Ghazzali and Natural Sciences; and Islam and Evolution of Science.

The seminar recommended that the university be requested to introduce a paper on Islam and Science in Science Faculty.

Curriculum Development Project for TANU

The Ford Foundation is reported to have chosen Tamil Nadu Agricultural University for the Curriculum Development Project. The purpose of the scheme is to improve the curriculum with changing conditions and make it more meaningful.

Mr. Robert Macadam, Director, Extension and Rural Development Centre of the University of Western Sydney, Hawkesbury in Australia, who has been chosen by the Ford Foundation for the purpose, recently visited the Agricultural College in Madurai and some of the research stations attached to it. He said that the Foundation had identified eight or nine universities in the world and TNAU was one among them. It was the only university chosen for the purpose in India.

He said they would link all these universities on a programme basis

and improve the curriculum so that the subjects taught would be on the basis of programmes like commercial agriculture, environmental agriculture, integrated farming system, etc. Under the scheme there would be exchange of teachers and students between the various Universities listed by the Ford Foundation and the Tamil Nadu Agricultural University.

The Ford Foundation was interested in improving the progressive agricultural universities in different parts of the world. There were possibilities of linking various farm universities with countries like the Philippines, Thailand and even with South Africa and Egypt. The Ford Foundation was at the moment concentrating on India. The farm university in Tamil Nadu had been doing impressive work.

News from UGC

Countrywide Classroom Programme

Between 15th January to 21st January, 1993 the following schedule of telecast on higher education through INSAT-1D under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 1.00 p.m. to 2.00 p.m. and 4.00 p.m. to 5.00 p.m. The programme is available on the TV Network throughout the country.

1st Transmission

1.00 p.m. to 2.00 p.m.

15.1.93

"Tall Fathers and Short Sons – I
Regression"

"Eutrophication"

"Imbibing Global Ecology – A
Unique Experiment in Learning"

16.1.93

"Puppetry for Play – I"

"Musical Notes and their Origin"

"The Week Ahead"

17.1.93

No Telecast

18.1.93

"Facing the Future – I"

"General Agreement on Trade
and Tariff – II"

"Hospital Management in India"

19.1.93

"Organic Techniques – I"

"Unveiling Antarctica"

"Conjoined Twins"

20.1.93

"Energy Management"

"Burial Mound at Sekta"

"New Techniques in Fish
Culture"

21.1.93

"Computers Around us"

"Trouble Shooting Techniques"

"Sanskrit Studies in Pune"

2nd Transmission

4.00 p.m. to 5.00 p.m.

15.1.93

"Geometry made Simple"

"Women in Development :
Malshiras – A Case Study"

"Footnotes"

16.1.93

"Theatre in Society – II
Free Theatre"

"Within Frame"

"The Week Ahead"

17.1.93

No Telecast

18.1.93

"Electromagnetic Induction"

"Innovation : Antarctic Paradox"

"Poseidon"

19.1.93

"The Halogens"

"Adieu to Body Fat"

20.1.93

"Fire Retardant Thatches"

"Natural Lagooning"

"History of Indian Jewellery – II"

21.1.93

"Buried Treasure : Silver"

"Bilingualism in India & Abroad"

ICDL and Distance Education Database

The International Centre for Distance Learning (ICDL) is a documentation centre based on the campus of the Open University in the United Kingdom, specializing in collecting and disseminating information on distance education worldwide. With a grant from the British Government's Overseas Development Administration, ICDL has now developed a comprehensive computerized database on distance education for the Commonwealth of Learning, an organisation created by Commonwealth Heads of Government to improve opportunities for students in commonwealth countries through distance education.

The database contains information on: Distance-taught programmes and course in the Commonwealth (over 20,000 entries); Distance teaching institutions worldwide (over 550 entries); and Literature of distance education worldwide (over 4000 entries).

The database can be accessed by subscribers: Online by connecting to the Open University computer in the United Kingdom - available 24 hours daily; Obtaining a compact disc from ICDL. New compact disc releases are prepared every four months.

The user interface is identical for both online and compact disc versions.

Online and compact disc versions are in widespread use. Many users are connecting to the online service via networks such as Internet as well as IPSS and direct dial. VT100 compatible terminal software is all that is necessary for online use. The CD-ROM version requires an IBM compatible computer with at least 512k RAM, a connected CD-ROM player and a printer (optional).

Further information can be obtained from Dr. Keith Harry, Direc-

tor, ICDL, c/o The Open University, Walton Hall, Milton Keynes, MK7 6AA, UK.

Smuts Fellowship in Commonwealth Studies

The Managers of the Smuts Memorial Fund invite applications for a Smuts Visiting Fellowship in Commonwealth Studies for the academical year 1994-95. The tenure of the Fellowship will be for one year from 1 October, but the date of the commencement of tenure may be altered by the Managers by not more than a few months to suit the convenience of the person appointed. The Fellow will be expected to reside in Cambridge during the major part of the tenure of the appointment and to advance Commonwealth Studies in Cambridge, mainly by pursuing research, but also by participating in the teaching work of the University. The interests of the Managers of the Smuts Memorial Fund embrace Commonwealth-related aspects of the following fields: archaeology and anthropology, economics, history, human geography, law, literature, oriental studies, and social and political sciences. The Editorial Board of the Cambridge Commonwealth Series will consider publication in the Series of suitable work

produced during the tenure of the Visiting Fellowship.

The emolument of Visiting Fellow will be a sum to be determined by the Managers, after taking account of his or her other resources, up to £6,000. The Managers will be prepared to consider awarding additional emoluments on the basis of financial and family circumstances. They may also, after considering the Fellow's resources, reimburse part or all of the cost of travel to Cambridge and back. Applicants for the Fellowship should be members of the staff of another university or other suitably qualified persons. Preference will be given to promising younger scholars who are nationals or permanent residents of the overseas countries of the Commonwealth who have a record of substantial research experience, including a Ph.D. Degree or equivalent qualification.

Applications should include the names of three persons to whom reference may be made and may be accompanied by not more than two testimonials. They should contain a curriculum vitae, list of publications, details of the proposed work to be undertaken in Cambridge, and details of the applicant's probable financial resources for the period of tenure of the Fellowship. They must be sent to the Secretary to the Managers of the Smuts Memorial Fund, 4 Mill Lane, Cambridge, CB2 1RZ, so as to reach him not later than 31 May 1993.



INDIAN COUNCIL OF PHILOSOPHICAL RESEARCH

Rajendra Bhavan, 4th Floor,

210, Deen Dayal Upadhyaya Marg,

New Delhi-110 002

FELLOWSHIPS 1993-94

Applications are invited for the award of Senior Fellowships, General Fellowships, Junior Research Fellowships, Short-term Fellowships, Residential Fellowships & Fellowships for Preparing Learning Material from eligible scholars

Details of the fellowships and the application forms can be obtained by sending a self-addressed Rs 300 stamped, 25 cm x 11 cm envelope to the Director (P&R) on or before 30.1.1993. The completed applications should reach him by 28.2.1993. The Council reserves the right to consider the name of any person for the award of a fellowship though he/she may not have applied.

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Doctoral Research in Indian Universities

This refers to Dr. ANP. Ummerkutty's article entitled 'Raising the Quality of Doctoral Research in Our Universities', published in the *University News* of October 26, 1992. The author has very well pointed out that Ph.D. works belong to the category of junior level research. Of course, most of these research works are carried out for the purpose of getting a degree. In order to get over various ailments of doctoral research the author has suggested publication of the summaries of research contributions by the concerned universities. Also, the author has very well said that Calicut University is going to make such a venture by publishing the substance of a thesis in 3-4 printed pages.

The proposed effort and suggestions of the author are quite praiseworthy. But simply publication of thesis may not improve quality of research in the universities. Perhaps it is a well known fact that in most of the disciplines 'Survey of Research' are published at the national or international levels, where a synoptic view of research work of an individual is published. But this has not ensured quality research at Ph.D level. The researchers do not become conscious or better researchers simply when they get their works published. There are a large number of reasons for this deplorable state of affairs. Foremost is that Indian researchers are problem blind. The research problems selected by them are generally irrelevant, trivial and non challenging. The research studies so undertaken describe only existing status. Further, the completed research yields findings which are already known or perceived. This practice is disappointing and does not help to generate knowledge to build a sound policy or practice at

any level. A large number of such ailments can be counted by anyone who is connected with research programmes in the universities. The problem, even lies with the failure of many editors of research journals or books to insist that quality of research be necessary condition for publication. No guidelines have ever been planned for universities or research institutions for reviewing the research reports or articles. If at all, some guidelines exist these suffer from many limitations. All this has made research programmes in the universities a lopsided affair.

Therefore, apart from publication programme, the universities should follow certain precautions and make a concerted effort by introducing some changes in their management so as to help knowledge generation programme.

First and foremost thing is to prepare research leaders through rigorous training. These leaders have not only to be sound in research methodology but also should have insight to perceive problems in their respective disciplines. The training programme should be a regular feature in each faculty by organising certain activities. The activities may be : (a) to have regular research seminars for the doctoral students and the staff. The research proposals may be placed before the forum like this; (b) Talks by guest speakers on research should be arranged occasionally. It will make researchers visualise the problems to be investigated in their respective fields; (c) There should be a provision for departmental libraries to be managed by the research staff. The library should remain open for late hours in the evening and early hours in the morning so that the researchers can benefit from the

library; (d) A self-evaluation of the institution should be done every year by studying the growth of research output and viewing the trend of research done in the department. Again, after every five or six years evaluation should be done by outside experts and the same should be discussed for improvement with the staff members or research guides; (e) Mini-seminars should be organised at micro-level in the departments. The mini-seminars may be organised on weekly basis by the teacher and the research scholars guided by him. In such seminars free exchange of ideas between budding researchers will take place without the fear of leg pulling, (f) The professors or visiting fellows of the universities should be invited to different departments so as to have interaction with the research scholars on the issues concerning a discipline. This will help in developing interdisciplinary research. It can be further strengthened if the staff and researchers of different departments meet in the portals of a particular department on various issues concerning a discipline. All this and lot more can be done to provide rigorous training to the neo-researchers in the universities.

Secondly the forum of researchers and educational leaders of a university and nearby research institutions should occasionally meet to discuss 'what research says to the consumers' on various issues. Whenever they feel that research studies are handicapped to recommend anything substantial, the same may be highlighted by showing gaps. Such a document, should later on be circulated among various universities and research institutions.

Thirdly, the UGC with the help of faculty members of various universities should develop an evaluation proforma for evaluating a research project by the examiners.

The report of the examiners of a Ph.D. thesis should be prepared on the basis of this proforma. This report must also be published along with publications of thesis. It will be good if both these appear in the 'Annual Report' of a university at the time of granting a degree.

These are some of the suggestions to improve upon quality of research in the universities in India. But it never means that quantitative growth should be stopped. After all,

quantity breeds quality, and theorisation in any field depends upon data. Above all, what is required is a consciousness on the part of the researchers as well as educational leaders like Vice-Chancellors, Chairpersons of apex bodies, etc. to improve upon quality of research in the universities. It is only through concerted ventures and time-to-time reviews that research can provide useful and practical solution to various problems in the

country. Perhaps, Dr. Ummerkutti's words need to be repeated that it is difficult to give exhaustive suggestions here, but discussions and seminars can help in improving upon present state of affairs in Ph.D. level research.

S.P. Malhotra,
Reader,
Department of Education,
Kurukshetra University,
Kurukshetra.

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- b) Any of the NCERT FIELD ADVISERS at (1) Zoo Tinsli Road, Sahib Tila P.O. Baranmaldan, Garwahati 781 021; (2) 128/2, Kothrud Karve Road, Pune 411 029; (3) P-23, CIT Road, Scheme 55, Calcutta 700 014; (4) Sai Krupa Sahan, Below Forest Colony, Khalini, Shimla 171 002; (5) Awanti Nagar Colony, Bashir Bagh, Hyderabad 500 029; (6) Kothi No 72, Sector 19-A, Chandigarh 160 019; (7) 1-B, Chandra Colony, Behind Law College, Ahmedabad 380 006; (8) Boyce Road, Lalmonchira, Shillong 793 003; (9) 555-E, Mumfordganj, Allahabad 211 002; (10) MIG-161, Saraswatinar, Jawahar Chowk, Bhopal 462 003; (11) 108, 100 Feet Road, Hoskote Halli Extension, Banashankari III Stage, Bangalore 560 085; (12) Homi Bhabha Hostel, RCE Campus, Bhubaneswar 751 007; (13) Kankarbagh, Patrakar Nagar, Patna 800 020; (14) 64, IV Avenue, Ashok Nagar, Madras 600 083; (15) SIE Campus, P.O. Poojapura, Thiruvananthapuram 695 012; (16) 2-2A, Postak Bhawan, Jhalana Doongri, Jaipur 302 004; (17) Jammu & Kashmir Camp Office, Jammu 180 005.
- c) State Council of Educational Research and Training (SCERT) or State Institute of Education (SIE) in YOUR OWN STATE.

The papers should be sent at the following address and NOWHERE ELSE.
The last date for receipt of papers is 25 January, 1993.



Head
Department of Teacher Education & Special Education
National Council of Educational
Research & Training
Sri Aurobindo Marg, NEW DELHI 110 016.

dayp 82/472

RESEARCH IN PROGRESS

A list of Research Scholars registered for Doctoral Degrees in Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Rajarajeswari, R. Semigroups of operators. Kerala. Dr K S S Namboodiripad, Prof and Head, Department of Mathematics, University of Kerala, Kariavattom.

Statistics

1. Anil, V. Integrated Cauchy functional equation and its applications. Kerala. Dr R N Pillai, Prof and Head, Department of Statistics, University of Kerala, Kariavattom.

Physics

1. Anand, Suruchi. Laserspectroscopy of semiconductors/oxide materials. Delhi. Prof S L Gupta, Department of Physics and Astrophysics, University of Delhi, Delhi and Prof K P Jain, Head, Department of Physics, Indian Institute of Technology, New Delhi.

2. Arora, Charu. Correlation functions in condensed systems. Delhi. Dr S P Tiwari, Prof, Department of Physics, University of Delhi, Delhi.

3. Awasthi, Anita. Nuclear interaction in quark model. Delhi. Dr V S Bhasin, Prof, Department of Physics, University of Delhi, Delhi.

4. Gupta, Seema. Electrical properties of glasses. Delhi. Prof Abhai Mansingh, Department of Physics, University of Delhi, Delhi.

5. Jayant Kumar. Signals from the quark cluch plasma. Delhi. Dr J D Anand, Department of Physics, University of Delhi, Delhi and Dr A K Goyal, Department of Physics, University of Delhi, Delhi.

6. Mazumdar, Indranil. Study of the nuclei (proton rich) far away from the line of beta-stability. Delhi. Prof V S Bhasin, Department of Physics, University of Delhi, Delhi and Dr A K Sinha, Senior Scientist, Nuclear Science Centre, New Delhi.

7. Naithani, Jaya. Planetary boundary layer studies over India and Antarctica. Delhi. Dr K M Aggarwal, Vallabh Patel Chest Institute, Delhi and Dr H N Dutta, Scientist-E, National Physical Laboratory, New Delhi.

8. Pathak, Saurav. Transport properties of high density hadronic matter. Delhi. Prof Jai Dev Anand, Department of Physics, University of Delhi, Delhi and Dr V K Gupta, Department of Physics, University of Delhi, Delhi.

9. Shashi Shekhar. Study of possible signatures of quark-gluon plasma. Delhi. Dr Yogesh Kumar Mathur, Lecturer, Department of Physics, University of Delhi, Delhi.

10. Singh, Sachchidanand. Middle atmosphere: Dynamics study of gravity waves in the middle atmosphere. Delhi. Dr O P Nagpal, Department of Physics, University of Delhi, Delhi and Dr K K Mahajan, Deputy Director, National Physical Laboratory, New Delhi.

11. Suri, Minnu. Quark gluon plasma at finite temperature and density and some applications. Delhi. Prof Jai Dev Anand, Department of Physics, University of Delhi, Delhi.

12. Talwar, Shobhra. Plasma astrophysics. Delhi. Prof V B Bhatia, Department of Physics, University of Delhi, Delhi.

13. Tiwari, Sanjeev Kumar. Non-linearity and chaos in plasma. Delhi. Prof M P Srivastava, Department of Physics, University of Delhi, Delhi.

14. Tripathy, Sunil Kumar. Group theory. Delhi. Prof R P Saxena, Department of Physics, University of Delhi, Delhi.

15. Veeradhari, B. Low latitude radio communication. Delhi. Dr Narinder Nath, Reader, Department of Physics, University of Delhi, Delhi and Dr (Mrs) D R Laskhmi, Scientist E, National Physical Laboratory, New Delhi.

16. Verma, Dharmender. Electric and magnetic properties of diluted magnetic semiconductors. Delhi. Dr Shah Nawaz, Lecturer, Department of Physics, University of Delhi, Delhi.

Chemistry

1. Dhawan, Mukta. Trace metal interactions in vivo on hepatic heme catabolism in rats. Delhi. Dr Ramesh Chandra, Department of Chemistry, University of Delhi, Delhi.

2. Dubey, Manoj Kumar. Corrosion inhibition. Delhi. Dr Gurmeet Singh, Department of Chemistry, University of Delhi, Delhi.

3. Nehria, Lata. Transition metal complexes with tridentate ligands. Delhi. Dr Pawan Mathur, Department of Chemistry, University of Delhi, Delhi.

4. Pati, Hari Narayan. Biotransformations and chemistry of natural products. Delhi. Dr V S Parmar, Department of Chemistry, University of Delhi, Delhi.

5. Rohira, Bharti. Corrosion inhibition. Delhi. Dr Gurmeet Singh, Department of Chemistry, University of Delhi, Delhi.

6. Sahay, Ranjana. Studies in heterocyclic compounds. Delhi. Prof V K Ahluwalia, Department of Chemistry, University of Delhi, Delhi.

Engineering & Technology

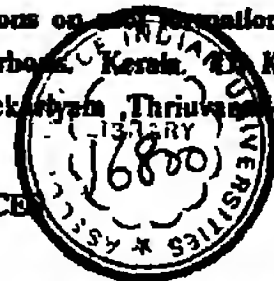
1. Abdul Jalcel, T K. Some aspects of modification of Al-Si alloys. Kerala. Dr R M Pillai, Scientist and Head, Department of Mechanical Engineering, Regional Research Laboratory, Thiruvananthapuram.

2. Ramabhadran Nair, V. Investigations on reaction kinetics during combustion of hydrocarbons. Kerala. Dr K Thyagarajan, Kani, Kailas Gardens, Sreekrishna Thiruvananthapuram.

BIOLOGICAL SCIENCES

Biotechnology

1. Seema Kumari. Interaction of E M waves with biomaterials. BHU. Dr N Mishra, Department of Biotechnology and Dr S P Singh, Department of Electronics Engineering, Institute of Technology, Banarus Hindu University Varanasi.



Botany

1. Churugu, Babecta. Pollen biotechnology for rassaica improvement. Delhi. Prof K R Shivanna, Department of Botany, University of Delhi, Delhi.

2. Dass, Preeti. Ecological studies in nitrogen removal from domestic waste water through ammonia volatilization, nitrification and de-nitrification in land application methods. Vikram. Dr S K Billore, Reader, School of Studies in Botany, Vikram University, Ujjain.

3. Gaddam, Eiji Babu. Phytotoxicity and interactive effects of cadmium with zinc and manganese and uptake, translocation and accumulation in *Abelmoschus esculentus*. Vikram. Dr V P Singh, Prof, School of Studies in Botany, Vikram University, Ujjain.

3. Gutch, Arti. Studies on certain aspects of seed dormancy and germination in *Hygrophila auriculata*. Vikram. Dr D Amritphale, Reader, School of Studies in Botany, Vikram University, Ujjain.

4. Jain, Nisha. Assessment of few tropical trees against air pollutants. Vikram. Dr P S Dube, Prof and Head, School of Studies in Botany, Vikram University, Ujjain.

5. Khujneri, Sanjay. Stress tolerance potential and defence strategy against air pollutants. Vikram. Dr P S Dube, Prof and Head, School of Studies in Botany, Vikram University, Ujjain.

6. Mehrotra, Vandana. Reproductive biology of Indian *Gracilaria* (Rhodophyta) from Port Okha. Delhi. Prof M R Vijayaraghavan, Department of Botany, University of Delhi, Delhi.

7. Padmakumar, B. Induced mutations in *Coleus parviflorus*.

Kerala. Dr K Ramachandran, Director, Academic Staff College, University of Kerala, Kariavattom.

8. Rasta, A P. In vitro studies on some crop plants. Delhi. Dr S D Bhojwani, Reader, Department of Botany, University of Delhi, Delhi and Dr P S Ganapathy, Department of Botany, University of Delhi, Delhi.

Zoology

1. Raghuvanshi, Mahendra Singh. Studies on the neuro-secretory cells of brain and ventral nerve cord of *Ropalidia marginata* during metamorphosis. Vikram. Dr J P N Pathak, Prof, Department of Zoology, Madhav Science College, Ujjain.

2. Saxena, Pankaj. Pre-impoundment studies on Western Zone of Narmada with special reference to macrozoobenthos. Vikram. Dr Sharad Shrivastava, Reader, School of Studies in Zoology, Vikram University, Ujjain.

3. Shukla, Arvind Nath. Limnological studies on Gandhi Sagar Reservoir with special reference to macrozoobenthos. Vikram. Dr Sharad Shrivastava, Reader, School of Studies in Zoology, Vikram University, Ujjain.

4. Sunil Kumar. Limnological studies in Gandhi Sagar Reservoir with special reference to oxygen and thermal regimes. Vikram. Dr K S Rao, Reader, School of Studies in Zoology, Vikram University, Ujjain.

5. Varghese, Johnson. Protection of some target organs in mice against inorganic mercury poisoning with a herbal compound: A histological study. Vikram. Dr H S Rathore, Lecturer, School of Studies in Zoology, Vikram University, Ujjain.

THESES OF THE MONTH

A list of Doctoral Theses accepted by Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Govinda Rao, Potnuru. Some features of harmonic waves in imperfectly bonded sandwich plates. Andhra.

2. Gupta, Seema. Some fluid distributions in spherically and allied symmetries in general theory of relativity. Roorkee.

3. Mandal, Subhas Chandra. Some mixed boundary value problems in elastodynamics. NBU.

4. Pawan Bala. Operator algebras of finite strict multiplicity. Delhi.

5. Venkateswarlu, Kolluru. Brouwerian vector spaces. Andhra.

Statistics

1. Shah, Narendrakumar Chandulal. Some contributions to sampling schemes and estimation procedures in survey sampling. Patel. Dr D N Shah, Prof, Department of Statistics, Sardar Patel University, Vallabh Vidyanagar

2. Thannippara, Alex. On optimal block designs for comparing test treatments with a control. Saurashtra. Dr D K Ghosh, Department of Mathematics and Statistics, Saurashtra University, Rajkot.

Physics

1. Amanullah, F M. Preparation and characterization of fluorine doped tin oxide (FTO) and tin doped indium oxide (ITO) thin films: Application to gas sensors and heat mirrors. Osmania.

2. Gulati, Ramesh. Optical effects in MESFETS. Delhi.

3. Gupta, Ratnesh. Low temperature studies of some disordered alloys. Devi Ahilya. Dr Ajay Gupta, Head, Department of Physics, Devi Ahilya Vishwavidyalaya, Indore.

4. Havalgi, Mohan. Study of electrical and magnetic properties of solids. Saurashtra. Dr R G Kulkarni, Prof and Head, Department of Physics, Saurashtra University, Rajkot.

5. Koka, Subbaravamma. Fluctuations in type-II superconductors. Hyderabad. Prof K N Shrivastava, School of Physics, University of Hyderabad, Hyderabad.

6. Majumdar, Bhabani. Quasi normal modes and time delay of signals in curved space-times. Delhi.

7. Makhan Singh. Behaviour of gamma ray interactions in composite materials. Punjabi. Dr Gurnel Singh, Lecturer, Department of Physics, Punjabi University, Patiala.

8. Pallah, Baljit Singh. A study of trace elements in biological and environmental samples using nuclear techniques. Punjabi. Dr H S Sahota, Prof, Department of Physics, Punjabi University, Patiala and Dr V K Mittal, Lecturer, Department of Physics, Punjabi University, Patiala.

9. Ramesh Babu, Yagatella. Multispectral solar radiation extinction studies over Waltair. Andhra.

10. Tiwari, Sanjay. Studies on the mechanoluminescence of gold doped (Zn Cd) mixed phosphors. Durgawati. Dr B P Chandra, Prof, Department of Physics, Rani Durgawati Vishwavidyalaya, Jabalpur.

Chemistry

1. Ananthapadmanabhan, P. Theory of charge transfer reactions in condensed media. CUST. Dr K L Sebastian, Prof, Department of Applied Chemistry, Cochin University of Science and Technology, Kochi.

2. Anitha, P. Studies in the formation and oxidative cyclisation of N-aryl-N',N''-bis (hetero-2-yl) guanidines. Osmania.

3. Baldev Raj. Studies in azomethines: Synthesis of new heterocyclics. Punjabi. Dr K K Singal, Reader, Department of Chemistry, Punjabi University, Patiala

4. Baljit Singh. Electrochemical synthesis of cadmium and mercury compounds. Punjabi. Dr Jagtar Singh, Reader, Department of Chemistry, Punjabi University, Patiala

5. Basu, Krishna. Studies on the kinetics and mechanisms of formation of hydroxamate complexes of vanadium (V) and molybdenum (VI) in solution. Calcutta.

6. Chakraborty, Amit Ranjan. Analytical studies on some environmental pollutants. Ravishankar. Dr R K Mishra, Prof, School of Studies in Chemistry, Pt Ravishankar Shukla University, Raipur.

7. Gohil, Narendrasinh B. Synthesis, reactivity and structural elucidation of metal organic compounds. Bhavnagar. Dr S N Mishra, Prof and Head, Department of Chemistry, Bhavnagar University, Bhavnagar

8. John, Koshy. Computation of spectral parameters from absorption difference and comparative absorption spectra of Neodymium (III) complexes in solution. Bhavnagar. Dr S N Mishra, Prof and Head, Department of Chemistry, Bhavnagar University, Bhavnagar

9. Kashyap, Rekha. Structural elucidations of the chemical constituents of some medicinal and non-medicinal plants. Delhi.

10. Khwaja Zuber Alam. Some physicochemical studies on adsorption and ion exchange. AMU. Dr K G Varshney.

11. Padmaja, K V. Study of some potential petrocrops for liquid fuels. Roorkee

12. Patel, Jayeshkumar Nathubhai. Synthesis, characterization and microbial studies of polyketone resins. Patel. Dr R M Patel, Reader, Department of Chemistry, Sardar Patel University, Vallabh Vidyanagar

13. Paul, Pradip Chandra. Studies on peroxo and fluoro compounds of vanadium and arsenic and a new route to monovalent metal compounds. NEHU. Dr M K Chaudhuri, Department of Chemistry, North Eastern Hill University, Shillong.

14. Rama Devi, A. Studies directed towards the synthesis of anticoccidial and antitumor compounds. Osmania.

15. Sahu, Balaram. Physico-chemical studies of some mixed hydroxylapatites. Sambalpur. Dr A Panda, Reader, Department of Chemistry, Sambalpur University, Burla

16. Singh, Madan Pal. Thermal and other physicochemical studies of some new lanthanide dithiocarbamates and carboxylates. Delhi

17. Sudha Rani, Ganti. The synthesis and study of some new oxygen and nitrogen heterocyclics. Andhra.

18. Theol, Arun Wasudcorao. Synthesis of anticancer agents, pyrimidines isoxazoles and related oxygen-nitrogen-heterocyclics. Nagpur. Dr B J Ghiya, Reader, Department of Chemistry, Institute of Science, Nagpur

19. Venkatesh Babu, M. Studies on iron based Fischer-Tropsch synthesis catalysts. Osmania.

20. Verma, Archana. Simultaneous assay and pre-column derivatization in high-performance liquid chromatography. Durgawati. Dr K K Verma, Department of Chemistry, Rani Durgawati Vishwavidyalaya, Jabalpur

21. Visweswara Srinivas, Akella Satya Surya. Synthesis and characterisation of new liquid crystalline compounds. Andhra.

Earth Sciences

1. Chakrabarti, Parthasarathi. Geomorphology and quaternary geology of Hooghly Estuary, West Bengal, India. Calcutta.

2. Gupta, Sulekha. Modelling of solute transport through an unsaturated zone extending from ground surface to water table. Roorkee.

3. Hijam Ibeyaima Devi. Geomorphological studies along the Iril River Basin. Manipur. Prof R P Singh, Department of Earth Sciences, Manipur University, Imphal.

4. Pitale, Umakant Laxman. Geological studies of thermal energy resources and associated mineralisation in Deccan trap province, Western Maharashtra, India. Nagpur. Dr G G Deshpande, Department of Geology, Nagpur University, Nagpur.

5. Ramakrishna, B N. Studies on ground water occurrences in granites in parts of Medak and R R Districts of Andhra Pradesh. Osmania.

6. Ramana Reddy, T Venkata. Petrology and geochemistry of the Deccan trap basalts of Bhir area, Maharashtra. Osmania.

7. Sharma, M L. Procedures for analysis of digital telemetered seismic array data. Roorkee

8. Shiva Kumar, P. Integrated geophysical and geochemical survey for hydrocarbons in Krishna-Godavari Basin, Kalkalur Area, A P, India. Osmania

9. Venkata Raman, Chavali. Studies on the hydroclimatology of the Damodar River Basin through water balance concept. Andhra.

Engineering & Technology

1. Adhikari, Sanatkumar. Heating of the upper atmosphere during high power radio wave propagation. Calcutta.

2. Bhalla, Neelam. On constraint based object-oriented graphics database and algebraic query model for object-oriented databases. JNU. Dr S Balasundaram, Asstt Prof, School of Computer and Systems Sciences, Jawaharlal Nehru University, New Delhi.

3. Bhargava, Sunil Kumar. Transient response investigations of short journal bearing systems during acceleration and deceleration periods. Roorkee.

4. Dinesh Kumar. Analysis and optimization of systems availability in sugar, paper and fertilizer industries. Roorkee

5. Jamaluddin Noorzai. Non-linear soil structure interaction in framed structures. Roorkee

6. Musafir, Ibrahim R. Study of seepage in earth dams. AMU. Dr S Khalid, Reader, Department of Civil Engineering, Aligarh Muslim University, Aligarh

7. Sujatha, Vanapalli. Studies on ionic mass transfer with coaxially placed helical tapes on a rod in homogeneous fluid and fluidized beds. Andhra.

CLASSIFIED ADVERTISEMENTS

GURUKULA KANGRI VISHWAVIDYALAYA HARDWAR

Applications are invited from Indian citizens possessing the requisite qualifications and experience for the post of Registrar in the scale of pay of Rs 4500-150-5700-200-7300.

ESSENTIAL QUALIFICATIONS

- (a) A postgraduate degree with atleast 55% marks or its equivalent grade.
- (b) At least 15 years of experience as Lecturer/Reader of which 8 years should be in Reader's grade with experience in Educational Administration

or

Comparable experience in research establishments and other institutions of higher education

or

15 years of administrative experience of which 8 years as Deputy Registrar or an equivalent post.

1. The post carries usual D.A. and other allowances as admissible under the rules of the University. Persons on lien will carry their own scale of pay
2. Appointment will be made on temporary basis
3. Six copies of the application forms alongwith attested copies of certificates/Marksheets and a Bank draft of Rs. 30/- (Rupees thirty only) payable to the Registrar, Gurukula Kangri Vishwavidyalaya, Hardwar should be sent to the Registrar, Gurukula Kangri Vishwavidyalaya, Hardwar so as to be received by him on or before 20th Jan. 1993. Applications received after the prescribed date will not be entertained
4. Candidates in service must apply through proper channel
5. Issue of this advertisement does not make it binding on the University to make appointment
6. The University may call for interview only those candidates who are found eligible after the preliminary screening.
7. No TA and DA shall be paid for attending the interview
8. The University may also consider for appointment those persons who have not applied for the post
9. The term of the Registrar shall be limited to five years in the first instance but the same individual shall be eligible for re-appointment

10. This advertisement supercedes the previous advertisement for the post of Registrar published in the University News of June 1992.

REGISTRAR

MANIPUR UNIVERSITY CANCHIPUR : IMPHAL

Advertisement No. 12

Dated, the 16th December, 1992

No MU/4-16/87/FCY : Applications in the prescribed form are invited from qualified candidates (as per UGC Circular No. 11/87 (CPP) dated the 24th September, 1992) for the following posts so as to reach the Registrar on or before February 27, 1993.

PROFESSOR : 1 each in Biochemistry, Education, Political Science, History, Manipuri, Computer Science, Management Studies.

ASSOCIATE PROFESSOR : Chemistry - 1 (Temporary, likely to be permanent), Life Sciences - 2, English - 2, Manipuri - 1, Statistics - 1, Computer Science - 1; Management Studies - 2; Mathematics - 2

ASSISTANT PROFESSOR : Life Sciences - 3 (One Leave Vacancy), Computer Science - 1, English - 1, Anthropology - 1, Chemistry - 2, Commerce - 1, Geography - 2 (One Leave Vacancy), Earth Sciences - 1 (Leave Vacancy), Management Studies - 3

DEPUTY LIBRARIAN - 1

PROGRAMMER (Computer) - 1

10 percent of the posts of Assistant Professors may be reserved for SC/ST

SCALE OF PAY :

Professor : Rs 4500-150-5700-200-7300/-

Associate Professor & Programmer : Rs. 3700-125-4700-150-5700/-

Assistant Professor & Deputy Librarian : Rs. 2200-75-2800-100-4000/-

Other allowances are admissible as per University rules

The prescribed application forms and other particulars (Qualifications prescribed, branch of specialization, etc.) are available from the Counter on payment of Rs 15/- per application form by cash or by a crossed Demand Draft/Postal Order drawn in favour of the REGISTRAR, MANIPUR UNIVERSITY, CANCHIPUR, IMPHAL-795003

One Self-addressed envelope of size 27 cm x 12 cm bearing stamps for Rs 3/- should also be enclosed if the application form is to be sent by post. The University will not be responsible for any loss or delay in transit of the form

It will not be binding on the University to invite all the applicants who fulfil the minimum qualifications for appearing before the Selection Committee. Candidates whose names have been recommended by the Screening Committee of the University only shall be called for interview

Dr. T. Gokulchandra Singh
REGISTRAR

DEVI AHILYA VISHWAVIDYALAYA INDORE

University House, R.N.T. Marg,
Indore-452001

EMPLOYMENT NOTICE

No Estt/III(13)92 Dated : 28.11.1992

Applications in the form available from the undersigned on payment of Rs 10/- in person or Rs 20/- by means of Crossed IPO/DD payable to Registrar, DAVV, Indore, are invited for the following positions. Completed application form should reach the undersigned by 18/1/1993. Applications on plain paper accompanied with IPO/DD of Rs 25/- will also be considered. Minimum qualifications and pay scales are as prescribed by the AICTE for Engineering Sciences subjects and UGC for others. Candidates may be considered for a lower position, than applied for. R. L. T & SP denote Reader, Lecturer, Temporary and Specialization respectively

(1) **EDUCATION** R-1 (T) SP. Preference will be given to candidates having experience of teaching Sociology of Education. L-1 (T)
(2) **JOURNALISM AND MASS COMMUNICATION** L-1 (T) SP. Preference will be given to candidates having teaching and practical experiences in Photojournalism and Photography
(3) **ELECTRONICS** L-1: SP: Fibre optics and Optical Communication, Communication Engineering/Control Engineering, Analog Design and Solid State Devices
(4) **LANGUAGE AND CULTURE** L-1 SP. Proficiency in creative writing in Hindi, English and in any one of the Indian or Oriental languages.

Candidates who have applied for the post of Lecturer in Education in response to earlier Advt. No Estt./III(18)/91 dated 30/11/1991 and Lecturer in Language and culture in response to Advt. No Estt./III(12)/92 dated 27/7/1992, need not apply again but they should intimate their willingness to be considered. SC/ST reservation as per rules

C.P. Modi
REGISTRAR

PUNJAB AGRICULTURAL UNIVERSITY, LUDHIANA

ADMISSION NOTICE

Applications are invited for admission to Ph.D. programme in the following subjects for the academic session, 1992-93 :

COLLEGE OF AGRICULTURE

Agronomy, Animal Science (Animal Breeding, Animal Production Physiology, Livestock Production & Management), Animal Nutrition, Agril Meteorology, Extension Education, Entomology, Food Technology, Pomology, Vegetable Crops, Plant Breeding, Plant Pathology and Soil Science

COLLEGE OF BASIC SCIENCES & HUMANITIES

Botany, Chemistry, Biochemistry, Agril Economics, Sociology, Genetics, Statistics, Microbiology, Zoology, Business Administration and Physics.

COLLEGE OF VETERINARY SCIENCE

Vety Anatomy & Histology, Vety Bacteriology and Virology, Vety Gynaecology & Obstetrics, Vety Surgery & Radiology, Vety Medicine, Vety Pharmacology & Toxicology, Vety Parasitology, Vety Pathology and Vety Physiology

COLLEGE OF AGRICULTURAL ENGINEERING

Farm Power & Machinery, Soil and Water Engineering, Processing & Agricultural Structures, Agro Industrial Processing and Mechanical Engineering.

SCHOOL OF ENERGY STUDIES IN AGRICULTURE

Energy Science & Technology in the fields of Engineering.

BIOTECHNOLOGY CENTRE

Biotechnology in the field of Plant Breeding, Entomology, Animal Science, Genetics, Biochemistry, Microbiology.

COLLEGE OF HOME SCIENCE

Home Science Education & Extension, Foods & Nutrition and Home Management

MINIMUM QUALIFICATIONS AT A GLANCE

i) FOR INSERVICE CANDIDATES : A grade point average of 3.20 (4.00 basis) or 50% marks at Master's level in the respective field and a grade point average of 2.00 (4.00 basis) or 40% marks at graduation level

Inservice candidate shall be an employee of PAU or Punjab Govt., or Union Territory of Chandigarh having at least five years experience of teaching/research/extension, out of which at least three years' should be after obtaining M.Sc. degree on the last date of receipt of applications

ii) FOR OTHER THAN INSERVICE CANDIDATES : A grade point average of 3.40 (4.00 basis) or 60% marks at Master's level in the respective field and a grade point average of 2.00 (4.00 basis) or 50% marks at graduation level

NOTE : Please see Prospectus for the academic year 1992-93 for detailed qualifications, reservation and fellowships, etc

FELLOWSHIPS : Besides the University Fellowships, fellowships are also available under UNDP Project in the subject of Soils, Foods & Nutrition. School of Energy Fellowships shall also be available to those Ph.D. students of FPM, PAS, SWE, EE, Biochemistry, Microbiology and Economics who opt to specialise in the area of energy

PROSPECTUS AND APPLICATION FORMS : Available from the office of the Registrar, Punjab Agricultural University, Ludhiana on payment of Rs. 15/- per copy by cash at counter or by sending crossed Indian Postal Order (s) Rs. 20/- payable to the Comptroller, Punjab Agricultural University at PAU Post Office, Ludhiana

LAST DATE FOR RECEIPT OF APPLICATIONS : 14.1.1993

- NOTE : i) Only one application form will be entertained for Ph.D. programme on the basis of first preference of subjects mentioned in the application forms in the order of interview fixed below. Incomplete applications without due testimonials are liable to be rejected.
- ii) The candidates seeking admission to Ph.D. programme shall be interviewed for the subjects of their first and second preference simultaneously and their merit in the respective subjects shall be prepared accordingly. The candidates giving second preference will be considered only when the list of the first preference candidates is exhausted. First preference will be given for the major subject and second preference will be for the minor subject at the Master's level

INTERVIEWS : Interviews will be held on the following dates, time and place mentioned against the subject

Subject	Date	Time	Place of Interview
Agronomy, Extension Education, Entomology, Plant Pathology, Food Technology	21.1.93	9.00 AM	Pal Auditorium Complex, PAU, LDH
Plant Breeding, Pomology, Vegetable Crops	22.1.93	9.00 AM	-do-
Animal Science, Soils, Animal Nutrition, Agricultural Meteorology	25.1.93	9.00 AM	-do-
Botany, Chemistry, Biochemistry, Business Administration	27.1.93	9.00 AM	-do-
Genetics, Zoology, Microbiology, Agril Economics, Sociology, Statistics, Physics.	27.1.93	9.00 AM	-do-
• College of Home Science	28.1.93	9.00 AM	-do-
• College of Vety Science	29.1.93	9.00 AM	-do-
College of Agril Engineering	29.1.93	11.00 AM	-do-
Energy Science & Technology	29.1.93	12.00 Noon	-do-

*All Subjects

NOTE : iii) No separate interview letter will be issued
No T/A/D A. is admissible.

Kulbir Singh
REGISTRAR

UNIVERSITY OF POONA

Advt. No. 158

Date: 22/12/1992

Appointment of Registrar

Post Reserved for Scheduled Caste

Applications are invited from Scheduled Caste including New Backward candidates for the post of Registrar, University of Poona, Pune-411007.

Pay & Allowances:

Rs. 4500-150-5700-200-7300 and other allowances admissible as per University Rules.

Qualifications and Experience:

Minimum qualifications prescribed by the University Grants Commission and Maharashtra Government for the post of Registrar is equivalent to the post of Professor which is as under:

An eminent scholar with published work of high quality, actively engaged in research with 10 years experience in postgraduate teaching and/or research at the University/National

level institutions, including experience of guiding research at doctoral level.

OR

As outstanding scholar with established reputation who has made significant contribution to knowledge.

Nature of Appointment:

The present vacancy is created as the Registrar has gone on leave and therefore the appointment will be on temporary basis for a period of maximum four years. The appointment may be terminated with one month's notice or one month's pay in lieu thereof.

Age:

The candidate shall not be ordinarily below 45 years unless already in the service of Universities or Affiliated Colleges.

General Conditions:

Knowledge of Marathi is essential.

Candidates already in service should submit their applications through proper channel.

Last Date:

Application form is available on payment of Rs. 25/- in cash or by sending Indian Postal Order

of Rs. 25/- + Rs. 5/- (postage) along with self-addressed stamped envelope (23cm x 40 cms) so as to reach the Registrar on or before 1st February, 1993.

Other:

The Registrar will be provided with rent free quarter.

Those of the candidates from Reserve Category (S.C.) who have requisite qualification and who have applied for the post of Registrar as per earlier Advt. No. 67 of 23-9-1991 should apply again.

Certified xerox copies of educational qualifications and certificates of experience and not the original certificates or testimonials be sent with the application.

Applicants if called for interview, will have to attend it at their own cost.

Dr. M.D. Nalwade
REGISTRAR

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University News

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TN Veterinary Varsity Convocation



From L to R : Shri K.P. Krishnan, Tamil Nadu Minister for Agriculture and Animal Husbandry & Pro-Chancellor, Dr. V.L. Chopra, Director General, ICAR, who delivered the convocation address, Shri Bhishma Narain Singh, Governor of Tamil Nadu & Chancellor, and Dr. M. S. Swaminathan, Vice-Chancellor.